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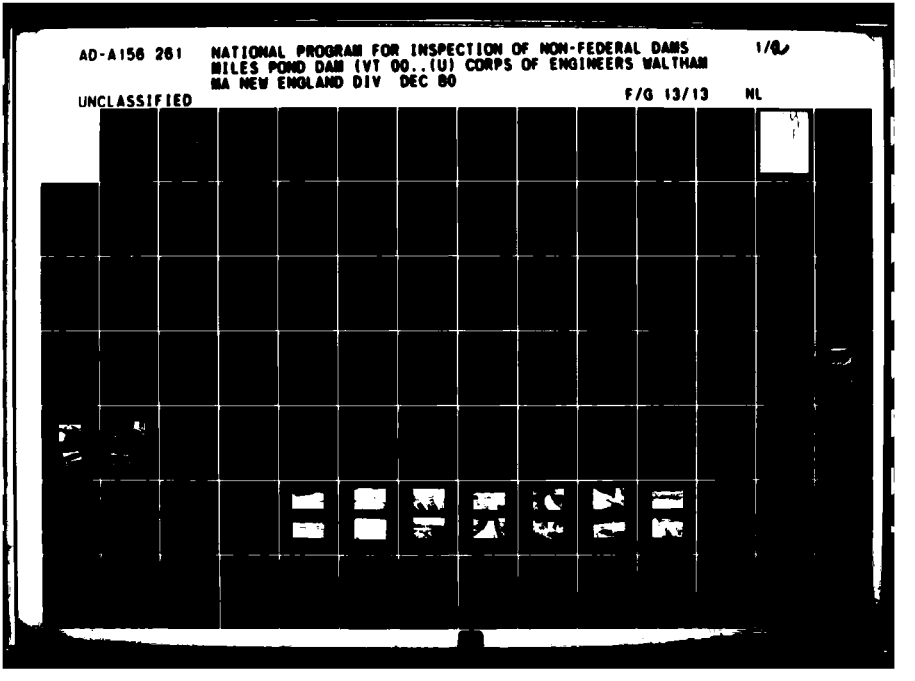

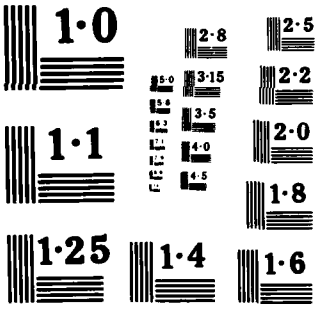
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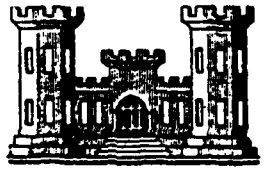
CONCORD, VT

MILES POND DAM
VT 00062

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
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DECEMBER 1980

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4. TITLE (and Subtitle) Miles Pond Dam NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS		5. TYPE OF REPORT & PERIOD COVERED INSPECTION REPORT 6. PERFORMING ORG. REPORT NUMBER
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9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
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Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

DAMS, INSPECTION, DAM SAFETY,

Connecticut River Basin
Concord, VT.
Miles Pond Brook

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

THe dam is an earth embankment with a concrete outlet structure and emergency spillway about in the center of the dam. It is 19 ft. high and is about 400 ft long. The dam is judged to be in good condition. However, due to the hydraulic inadequacy of the emergency spillway the overall condition is judged to be fair. It is intermediate in size with a high hazard potential. T è test flood for the dam is equal to the full PMF. There are various remedial measures which should be undertaken by the owner.

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NATIONAL DAM INSPECTION PROGRAM
PHASE I - INSPECTION REPORT
BRIEF ASSESSMENT

Identification Number:	VT00062
Name of Dam:	Miles Pond Dam
Town:	Concord
County and State:	Essex, Ver ont
Stream:	Miles Pond Brook
Date of Inspection:	September 30, 1980

Miles Pond Dam is an earth embankment with a concrete outlet structure and emergency spillway approximately in the center of the dam. The dam is 19 feet high and is approximately 400 feet long. Presently the dam serves to raise a natural impoundment of water for recreational use. The appurtenant works consist of a stop log chute spillway, an emergency spillway, and a concrete discharge culvert downstream of the dam. Engineering data pertinent to the original construction of the dam is nonexistent. Available engineering data was limited to design drawings, inspection reports and various records pertaining to the 1969 reconstruction. No record plans were available. Consequently, emphasis was placed on the findings of the visual inspection.

Based upon the visual inspection, the dam is judged to be in good condition. However, due to the hydraulic inadequacy of the emergency spillway the overall condition is judged to be fair. The inspection did reveal potential structure problems, such as, broken and cracked joints of the granite block emergency s, illway and concrete erosion of the discharge culvert.

In accordance with the Corps of Engineers' guidelines for the Intermediate size and High hazard classification of the dam, the test flood should be equivalent to the Probable Maximum Flood (PMF). The peak inflow of the PMF to the reservoir is 12,035 cubic feet per second (cfs) and the peak outflow, with the stop logs at the elevation of 98.5 (normal operation level), is 11,270 cfs. The dam will be overtopped by 3.4 feet during the PMF. With water at the crest of the dam, the apacity of the spillways is 2,160 cfs, which is equivalent to 19% of the routed test flood outflow.

The owner should engage a qualified, registered engineer to perform a detailed hydrologic-hydraulic investig tion to assess further the potential of overtopping the dam and the need for the means to increase the project discharge capacity.

The following remedial measures should be implemented by the owner under the direction of a qualified registered engineer: develop formal surveillance

and downstream warning plans; and institute a program of annual technical inspection.

The recommendations and remedial measures are described in detail in Section 7. They should be addressed within one year after receipt of the Phase I Inspection Report by the owner.

Very truly yours,

DuBois & King, Inc.

Robert J Wernecke

Robert J. Wernecke, P.E.
Project Manager

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these Guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

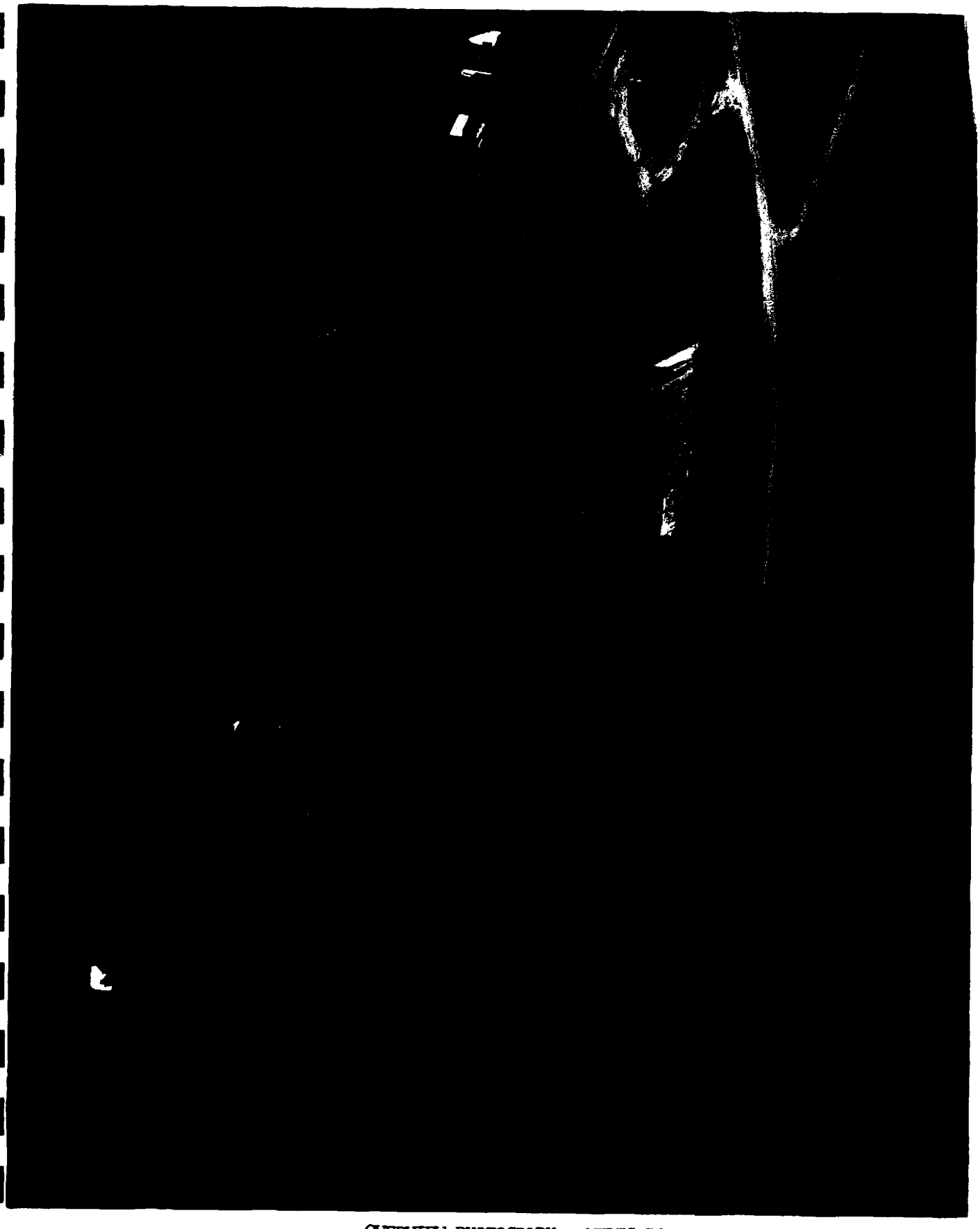
In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

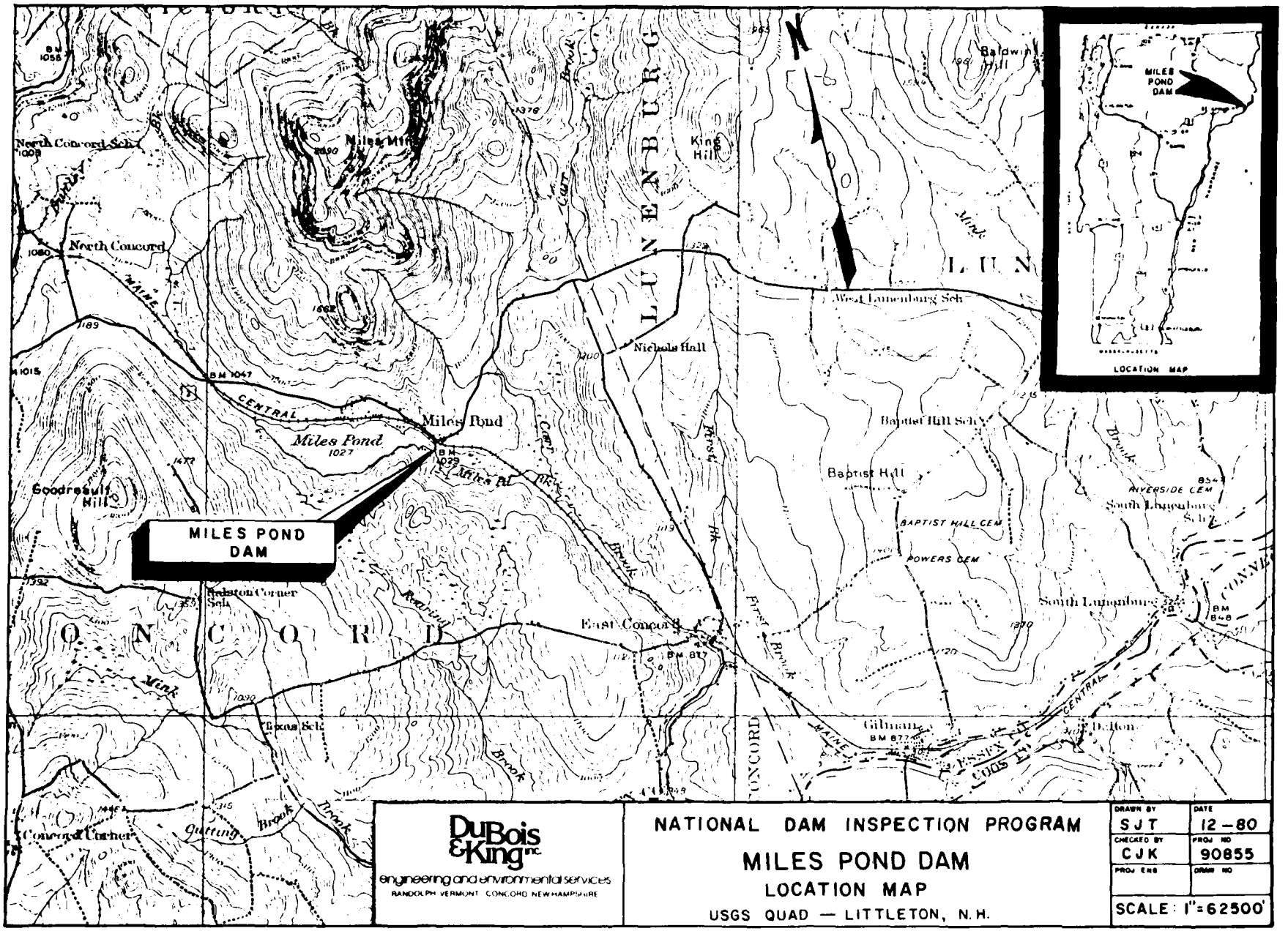
Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test Flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably-possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

The Phase I investigation does <u>not</u> include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

TABLE OF CONTENTS



OVERVIEW PHOTOGRAPH - MILES POND DAM



DuBois & King inc.
engineering and environmental services
RANDOLPH VERMONT CONCORD NEW HAMPSHIRE

NATIONAL DAM INSPECTION PROGRAM

MILES POND DAM

LOCATION MAP

USGS QUAD — LITTLETON, N.H.

DRAWN BY: SJT	DATE: 12-80
CHECKED BY: CJK	PROJ NO: 90855
PROJ ENG	DRAW NO

SCALE: 1"=62500'

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT
MILES POND DAM

SECTION 1
PROJECT INFORMATION

1.1 General

a. Authority. Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a National Program of Dam Inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. DuBois & King, Inc., has been retained by the New England Division to inspect and report on selected dams in the State of Vermont. Authorization and notice to proceed were issued to DuBois & King, Inc., under a letter of September 11, 1980 from Max B. Scheider, Colonel, Corps of Engineers. Contract No. DACW33-80-C-0003 has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection

(1) To perform technical inspection and evaluation of non-federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-federal interests.

(2) To encourage and prepare the states to quickly initiate effective dam safety programs for non-federal dams.

(3) To update, verify and complete the National Inventory of Dams.

1.2 Description of Project

a. Location. Miles Pond Dam is located in the Town of Concord, Essex County, Vermont. The dam is located on Miles Pond Brook, approximately 4.2 miles upstream of its confluence with the Connecticut River. The dam is shown on the 7.5 minute U.S.G.S. quadrangle for Miles Pond, Vermont - New Hampshire, with coordinates approximately 71° 47.7' west longitude, 44° 26.7' north latitude. The location of Miles Pond Dam is shown on the location map immediately preceding this page.

b. Description of Dam and Appurtenances. Miles Pond Dam is an earth embankment with a concrete cutoff wall at the outlet structure and emergency spillway approximately located in the center of the dam. The earth embankment top width varies, with a minimum of 10 feet. The side slopes also vary with a maximum slope of 3 horizontal to 1 vertical to a level grade. The dam is approximately 400 feet long and 19 feet high as measured from the invert of the discharge culvert to the top of the dam. The finished grade downstream of the dam is approximately 10 feet below the top of the dam at elevation 92.0 feet. The concrete cutoff wall section of the dam is approximately 125 feet long. The crest of the embankment varies in elevation from 101.3 to 102.5 feet.*

*NOTE: All elevations are based on an assumed elevation of 102.5, taken from the left corner of the concrete cutoff wall.

The outlet structure consist of a principal spillway and an emergency spillway. The principal spillway is a stop log chuted structure with two 4.3 foot wide openings. The sill elevation of the two openings is 92.0 feet. With the stop logs in place the elevation of the outlets is 98.5 feet. The concrete chute spillway discharges into a concrete box culvert, 6.1 feet high by 5.2 feet wide and 280 feet long which in turn discharges into the natural outlet stream.

The emergency spillway, which is adjacent to the principal spillway, has a 12-inch wide sill, 90 feet long at elevation 99.0 feet. The downstream slope of the emergency spillway is lined with grouted granite blocks. At the base of the slope is side channel which diverts the overflow into the same concrete box culvert. The side channel also acts as an energy dissipator for discharges in excess of the box culvert capacity which then flow down a grassed waterway before entering the natural outlet channel.

c. Size Classification. Miles Pond Dam is 19 feet high and has a storage volume of 2,200 acre-feet of water. In accordance with Article 2.1.1 of the Recommended Guidelines for Safety Inspection of Dams, the dam is Intermediate in size based upon its storage capacity which is greater than 1,000 acre-feet but less than 50,000 acre-feet.

d. Hazard Classification. The dam has a hazard classification of High based upon its potential for damage. Development downstream of Miles Pond Dam along Miles Pond Brook is confined to the small rural settlement of East Concord. As the computed breach flood wave approaches East Concord approximately 2.8 miles downstream it will be at a stage of 9 to 11 feet above the streambed at a discharge of 8,400 cfs. Appreciable damage could occur and it is possible that more than a few lives may be lost in areas of East Concord where 3 to 5 housing units are 6 to 8 feet above the streambed. Before the flood wave reaches East Concord, traveling down Miles Pond Brook, the wave inundates two railroad crossings owned by Maine - Central. The flood wave overtops each railroad bridge by approximately 3 feet. The Maine - Central Railroad Co., Mountain Division, is used to ship freight, averaging 1.8 billion gross tons of freight per year.

e. Ownership. The dam is owned by the State of Vermont, Department of Water Resources, Montpelier, Vermont 05062. Contact Mr. A. Peter Barranco, State Dam Safety Engineer, (802) 828-2261.

f. Operator. The dam is operated and maintained by the State of Vermont, Department of Water Resources, Montpelier, Vermont 05062. Contact Mr. A. Peter Barranco, State Dam Safety Engineer, (802) 828-2261.

g. Purpose. The purpose of this dam is primarily to create an impoundment of water for recreational use.

h. Design and Construction History. Based on records available at the State of Vermont Department of Water Resources, prior to 1968 the Miles Pond Dam was owned by Miles Pond Wood Product, Inc. The date of construction of the original dam is not known. The State of Vermont Department of Water Resources acquired ownership in 1968. In 1969, under the direction of The State of Vermont Department of Water Resources, DuBois & King, Inc. of Randolph, Vermont redesigned the Miles Pond outlet structure.

In 1970 after reconstruction of the outlet structure was completed, subsidence occurred in the emergency spillway basin (see photographs of failure in Appendix B). The emergency spillway was repaired by securing the placement of the granite blocks by grouting.

i. Normal Operating Procedure Miles Pond Dam is maintained for recreational purposes. The normal water surface elevation to be maintained in Miles Pond is 98.5 feet, except during the period of October 15 through May 15, the winter level is 1.5 to 2 feet below the normal water surface elevation of 98.5.

1.3 Pertinent Data

a. Drainage Area. The drainage basin of Miles Pond Dam has an area of 6.7 square miles. The land is mostly forested and the terrain is mountainous. The elevations range from 2690 feet at the top of Miles Mountain to 1027 feet which is the elevation of Miles Pond based on the U.S.G.S. 7.5 minute quadrangle map. The basin is sparsely populated with the major development occuring on approximately 30 percent of the Miles Pond shoreline. The maximum lake area represents approximately 5 percent of the total drainage area. The predominant soils in the watershed are Peru-Marlow and Lyman-Marlow-Peru associations.

b. Discharge at the Dam Site.

(1) Outlet Works. The principal spillway is a stop log chute structure which is located in the center of the earth embankment. The stop log chute structure has two 4.3 foot wide opeinings, as shown on page 3 of 4 in Appendix B and in Photo #8 in Appendix C. The crest elevation of the stop log structure is 92.0 feet, which is approximately 10 feet below the crest of the dam. The stop log structure is the entrance to a concrete chute spillway which discharges into a concrete box culvert 6.1 feet high x 5.2 feet wide.

The maximum capacity of the stop log chute spillway (Crest elevation 92.0) is 550 cfs, with the water surface at the emergency spillway crest (elevation 99). However, under normal operating conditions (refer to Sections 1.2[i] and 2.3) the maximum capacity of the stop log chute spillway was calculated to be 11 cfs based upon the stop logs at elevation 98.5 feet.

(2) Maximum Known Flood. No records were available of past flooding at the site.

(3) Spillway Capacity at Top of Dam. The emergency spillway is a 12 inch wide concrete sill, 90 feet long at an elevation of 99.0. When the water surface elevation is at the top of dam, elevation 102.4 feet, the emergency spillway will discharge 1,920 cfs and the principal spillway will discharge 240 cfs, with stop logs at elevation 98.5, for a total capacity of 2,160 cfs. This represents the total project discharge at the top of the dam. This total project discharge is equivalent to 19 percent of the routed test flood outflow.

(4) Spillway Capacity at Test Flood Elevation. The full PMF test flood inflow for the 6.7 square miles is 12,035 cfs. The surcharge storage of 2,970 acre-feet will attenuate the peak outflow to 11,270 cfs at an elevation of 105.8 feet; this represents an overtopping of the dam by 3.4 feet. The principal spillway at elevation 98.5 will discharge 620 cfs while the emergency spillway discharges 5,430 cfs, for a total discharge of 6,050 cfs or 54% of the routed test flood outflow 11,270 cfs.

(5) Total Project Discharge. The total project discharge at the top of dam is 2,160 cfs at elevation 102.4. During the test flood when the inflow is 12,035 cfs, the total project will discharge 11,270 cfs at elevation 105.8.

c. Elevation (feet)

(1)	Steambed at toe of dam	83.1
(2)	Bottom of cutoff	N/A
(3)	Maximum	N/A
(4)	Recreational pool	98.5
(5)	Full flood control pool	N/A
(6)	Principal spillway crest	92.0
(7)	Emergency spillway crest	99.0
(8)	Design surcharge (Original Design)	Not Known
(9)	Top of dam	102.4
(10)	Test flood design surcharge	105.8

d. Reservoir Length (feet)

(1)	Normal pool el. 98.5	6200
(2)	Flood control pool	N/A
(3)	Emergency crest pool el. 99.0	6200
(4)	Top of dam el. 102.4	6400
(5)	Test flood pool el. 105.8	6500

e. Storage (acre-feet)

(1)	Normal pool	1370
(2)	Flood control pool	N/A
(3)	Emergency spillway crest pool	1500
(4)	Top of dam	2200
(5)	Test flood pool	2970

f. Reservoir Surface (acres)

(1)	Normal pool	210
(2)	Flood-control pool	N/A
(3)	Emergency spillway crest (pool)	210
(4)	Top of dam pool	216
(5)	Test flood pool	220

g. Dam

(1)	Type	Earth Embankment
(2)	Length	400 feet
(3)	Height	19 feet
(4)	Top Width	10 foot minimum
(5)	Side Slopes	
	Upstream	Level to 3:1
	Downstream	Level to 3:1
(6)	Zoning	No Zoning indicated on design drawings
(7)	Impervious core	Thin layer of "imp. fill" of undesignated thicknesss beneath riprap on upstream slope, according to design drawings.

(8)	Cutoff	1-foot thick concrete cutoff wall (see drawings Appendix B, Figures 3 and 4)
(9)	Grout curtain	None shown on design drawings

h. Diversion and Regulating Tunnel

Not applicable.

i. Emergency Spillway

(1)	Type	Concrete overflow in center of dam
(2)	Length of weir	90 feet
(3)	Crest elevation	El. 99.0
(4)	Gate	N/A
(5)	Upstream Channel	N/A
(6)	Downstream Channel	Grouted granite block basin and grassed waterway

j. Regulating Outlets

(1)	Invert	El. 92.0
(2)	Length of Weir	(2) - 4.3 feet
(3)	Description	Stop log structure with (2) 4.3 foot openings which discharges into chute spillway which discharges into concrete box culvert 6.1 feet high x 5.2 feet wide. Crest elevation can vary from 92.0 feet to 99.0 feet, which is crest of emergency spillway
(4)	Control Mechanism	Stop logs in inlet structure

SECTION 2
ENGINEERING DATA

2.1 Design.

No design information for the original dam is available.

For the 1969 reconstruction of Miles Pond Dam there was no design stability analysis performed for the dam and appurtenances. However, original design drawings, preliminary design hydrologic information and an executed copy of the contract and specifications are available for the 1969 reconstruction of Miles Pond Dam and are on file at DuBois & King, Inc., Randolph, Vermont 05060. (See Appendix B)

2.2 Construction Data.

No information is available concerning the original construction of the dam. No as-built plans are available for the 1969 reconstruction project of Miles Pond Dam. However, a significant amount of information concerning the 1969 reconstruction is available, such as, weekly inspection reports, miscellaneous design notes, construction photographs, reports on concrete aggregates, tests results of concrete poured, and miscellaneous survey notes for the construction site.

2.3 Operation.

No operating manual exists for Miles Pond Dam. Rules and regulations governing the water surface elevations of Miles Pond are implemented by the State of Vermont, Department of Water Resources. (See Appendix B) These regulations state that the water surface elevation shall be maintained at 98.5, assumed datum, except during the period October 15 to May 15 when the winter level of 1.5 to 2 feet below the established level is authorized.

2.4 Evaluation

a. Availability. While no information is available on the design of the original Miles Pond Dam, a significant amount of information is available concerning the 1969 reconstruction. For the 1969 reconstruction of Miles Pond Dam, information such as weekly inspection reports, miscellaneous design notes, and a set of executed contracts, plans and specifications are available from the State of Vermont Department of Water Resources, State Office Building, Montpelier, Vermont 05062. This agency also has in its files, copies of inspection reports. (See Appendix B). Weekly inspection reports, miscellaneous design notes, a set of executed contracts and specifications and the original design plans of the 1969 reconstruction of Miles Pond Dam are also on file at DuBois & King, Inc., Randolph, Vermont 05060.

b. Adequacy. The lack of actual as-built drawings and engineering data did not allow for definitive review. Technical data pertaining to the construction of the dam such as, type of materials used, and soils gradation and compaction were recorded randomly, due to the fact that full-time resident inspection was not provided. Consequently, emphasis was placed upon the findings of the visual inspection and sound engineering judgment.

c. Validity. The original design drawings concerning the reconstruction of the dam in 1969 do not appear to be completely accurate. Changes such as alignment of the left concrete abutment and small discrepencies in elevations are evident. These changes probably occurred during construction.

SECTION 3
VISUAL INSPECTION

3.1 Findings

a. General. The field inspection of Miles Pond Dam was performed on September 30, 1980. The weather was overcast and cool with temperature near 60°F. The inspection team included personnel from DuBois & King, Inc., Geotechnical Engineers, Inc., and Knight Consulting Engineers, Inc. A copy of the inspection checklist as completed during the field inspection is included as Appendix A. At the time of the inspection, the water surface elevation was at 98.5.

b. Dam. The dam is an earth embankment with the outlet structure located in the center of the dam (Photo 1). The embankment section between the principal spillway (stop log chute spillway) and the left abutment is mostly covered with grass which has been kept mowed. However, there is an unpaved sand-and-gravel road that crosses the crest close to the abutment and there are a few small bare spots elsewhere on the crest (Photo 2). The crest itself is slightly irregular but there is no evidence of sloughing on either the upstream or downstream slopes. There is minor erosion on the downstream slope.

The embankment section between the right end of the emergency spillway and the right abutment is mostly covered with grass which has been kept mowed. However, there is a rock outcrop with a few trees, located on the downstream slope, approximately 35 feet to the right of the right side of the emergency spillway (Photo 3). The crest itself is slightly irregular but there is no evidence of sloughing on either the upstream or downstream slopes. The right abutment appears to be in good condition.

The central section of the dam is the outlet structure. The central section of the dam consists of a principal and an emergency spillway. The emergency overflow spillway appears to be an earthen embankment paved with granite blocks on the downstream slope (Photo 4). The joints between the granite blocks have been slush-grouted. This grout has broken out of a few joints (Photo 5). There is a concrete wall at the crest of the dam, apparently a cutoff wall, extending the entire length of the emergency spillway from the stop log chute spillway structure to the right abutment. The slush-grouted granite blocks have slid down the slope leaving an approximately one-half inch crack between the concrete cutoff wall and the granite blocks (Photo 6). At the toe of the dam, there is a granite-block paved channel to carry minor overflows to the left side of the toe where they would discharge into the principal spillway between the stop log spillway entrance and the spillway culvert, which discharges about 280 feet downstream from the toe of the dam. There is a horizontal granite-block-paved apron extending about 10 feet downstream from the toe of the dam, and beyond that is a grassed waterway (which is kept mowed) extending about 280 feet downstream (Photo 7), to the outlet channel. No evidence of seepage from either the foundation or the abutments was observed.

c. Appurtenant Structures. The principal spillway consists of a stop log structure, a chute spillway and concrete box culvert. The stop log structure (Photo 8) provides the entrance into the chute spillway (Photo 8) which discharges into the concrete box culvert, 6.1 by 5.2 feet (Photo 9). The condition of the concrete and stop logs of the principal spillway is good. The stop logs have straight cut edges. The discharge outlet of the principal spillway is a 280 foot long concrete box culvert. The discharge end of the spillway culvert has undergone considerable concrete erosion near the invert level (Photos 10 & 11).

The emergency spillway consists of a 12 inch wide concrete sill, 90 feet in length, a basin paved with grouted granite blocks and a grassed waterway (Photo 4). The emergency spillway is in good condition except for the areas of the grouted granite blocks, where the grouted joints have broken or cracked (Photos 5 & 6).

d. Reservoir. Miles Pond is a natural lake which has had its water surface elevation raised by the Miles Pond Dam. The maximum depth of the lake is 55 feet. While the natural lake level is not known, a depth chart prepared by Vermont Department of Water Resources (Appendix B) indicates that the natural control is approximately 6 feet below the current normal elevation. The shoreline of the reservoir is very well maintained in the vicinity of the dam (Photos 12 & 13). A problem may occur when fallen trees or limbs from the upstream end of Miles Pond float down to the outlet and decrease its discharge capacity during periods of high water.

e. Downstream Channel. There are large boulders and some concrete rubble on the banks of downstream channel close to the discharge end of the culvert. Brush overhangs the channel downstream from the spillway culvert (Photo 14). The area downstream of the spillway culvert does not present a problem due to the extremely flat overbanks, and general swampy downstream conditions.

3.2 Evaluation

On the basis of the visual inspection, the dam is judged to be in good condition. Factors that can endanger the future condition of the dam are the following:

a. The unpaved roadway which crosses the embankment and a few spots bare of vegetation of the embankment near the left abutment would be susceptible to erosion if the dam were overtopped.

b. The slush grout between the granite blocks which pave the downstream slope of the emergency spillway is missing in some places. This grout was apparently placed after erosion of the soil under the granite blocks during earlier flows over the spillway. It is not possible to determine on the basis of the visual inspection above whether the grouting serves as essential purpose in preventing erosion of the granite block paving and underlying soils, or whether it might (if completely intact) result in water pressure building up under the paving which might endanger the spillway.

c. The concrete erosion at the discharge end of the spillway culvert could result in the collapse and blockage of the culvert.

SECTION 4
OPERATIONAL AND MAINTENANCE PROCEDURES

4.1 Operational Procedures

a. General. Miles Pond Dam creates an impoundment of water which is primarily used for recreation. During the summer months the water level is maintained at 98.5 feet to facilitate recreational benefits at Miles Pond. The lake level is lowered 1.5 to 2 feet during the period of October 15 to May 15, as a precautionary measure against winter and spring flooding. The lake level is controlled by regulating the number of stop logs installed in the stop log chute spillway (principal spillway).

b. Warning System. There is no formal warning system to alert downstream residents in case of an emergency at the dam.

4.2 Maintenance Procedures

a. General. There is a program for maintaining the dam. The Vermont Department of Water Resources does maintain the embankments and clears the spillways at least two times a year during pool level adjustments.

b. Operational Facilities. The stop logs are the only parts which require operation. The biannual operation of the upper portions of the stop logs is sufficient to keep them in good working condition. The lower sections are not normally removed.

4.3 Evaluation

The present maintenance to date has been sufficient but additional inspection will be required in the future to insure the security of the structure.

The spillways and the stop logs should be inspected on a regular basis and implement replacement or repairs as needed.

The owner should establish written procedures for operating and maintaining the structure. Written procedures should also be established for a formal warning system in case of an emergency.

SECTION 5
EVALUATION OF HYDRAULIC/HYROLOGIC FEATURES

5.1 General

Miles Pond Dam is an earth embankment with a length of approximately 400 feet and a structural height of 19 feet. The appurtenant works consist of two spillways; a principal spillway and an emergency spillway. The principal spillway consist of a stop log chute spillway (net weir length 8.7 feet), which discharges into concrete box culvert, 6.1 feet high x 5.2 feet wide. At the end of the stop log chute spillway there is an adverse slope which acts as an energy dissipator before the discharge enters the concrete box culvert. The chute spillway is regulated by two stop log openings. The spillway has an ungated elevation of 92.0 feet, with a normal operation elevation of 98.5 feet. The emergency spillway consists of a 12 inch wide concrete sill, 90 feet long, which discharges into a basin lined with grouted granite blocks. At the toe of the dam (bottom of basin), there is a granite-block-paved channel to carry minor overflows to the left side of the toe where they could discharge into the principal spillway between the stop log spillway entrance and the spillway culvert. If the spillway culvert should become plugged the discharge would then use the grass waterway below the principal and emergency spillways to reach the outlet channel. The crest of the emergency spillway is 99.0 feet. With the water level at the top of dam (102.4 feet), the stop log chute spillway at the normal operating elevation (98.5 feet) would convey 240 cfs and the emergency spillway could convey 1,920 cfs. Thus, the project would discharge 2,160 cfs at the top of dam, elevation 102.4. At the top of dam (102.4) the stop log chute spillway at the unregulated elevation of 92.0 feet would convey 990 cfs and the emergency spillway would convey 1,920 cfs. Thus, the project would discharge 2,910 cfs at the top of dam at the stop log chute spillway unregulated elevation of 92.0 feet. The 6.7 square mile watershed is primarily mountainous terrain and is predominantly forested with very little development. Development in the watershed is limited to the immediate lake shore area.

5.2 Design Data

The only hydrologic design information available for Miles Pond Dam is preliminary information obtained from DuBois & King, Inc. A copy of the preliminary data is included in Appendix B. The preliminary hydrologic data was not modified for the final spillway design changes, therefore, the values were not used.

5.3 Experience Data

There are no recorded experience of overtopping or any visual accounts of such.

5.4 Test Flood Analysis

The size of this structure puts it in the Intermediate class. It has storage of greater than 1,000 and less than 50,000 acre-feet. The hazard potential classification was determined to be High because the failure of

Miles Pond Dam is likely to endanger more than a few lives in three to five dwellings along Miles Pond Brook in East Concord. In accordance with the "Recommended Guidelines for Safety Inspection of Dams", the test flood is the full probable maximum flood (PMF). The full PMF discharge of 12,035 cfs was calculated using HEC-1, (Hydrologic Engineering Center - Flood Hydrograph Package). The routing of the full PMF thru Miles Pond Dam was accomplished by using the Modified Puls method in the HEC-1 computer program. The assumption was made that the pond would be at pool level elevation 98.5 feet (normal summer pool elevation) prior to beginning of test flood. During the test flood, the structure will be overtopped by 3.4 feet (elevation 105.8) which is a maximum pool storage 2,970 acre-feet. The outflow would be 11,273 cfs. This represents a 6 percent reduction of the test flood inflow. The two spillways can pass 2,160 cfs at the top of dam (elevation 102.4) or 19 percent of the test flood outflow. The ½ PMF flood of 6,020 cfs would have an outflow of 5,150 cfs or a reduction of the inflow by 14 percent and would overtop the crest of the dam by 1.3 feet (elevation 103.7)

5.5 Dam Failure Analysis

Using the Corps of Engineers, April 1978, "Rules of Thumb Guidance for Estimating Downstream Dam Failure Hydrographs", a dam failure analysis was performed for Miles Pond Dam. Prior to failure, the water level was assumed to be at the top of the dam (elevation 102.4). The breach height of 10.4 feet and breach width of 163 feet (40 per cent of the dam length) were used to compute the breach discharge of 9,190 cfs. Prior to failure with the water level at the top of dam the two spillways would be discharging 2,160 cfs.

The breach would produce a 10.4 foot depth with a discharge of 11,350 cfs immediately downstream of the dam. Approximately three miles downstream of Miles Pond Dam in the settlement of East Concord the flood wave would be at a stage of 9 to 11 feet above the streambed at a discharge of 8,400 cfs. Appreciable damage could occur in the areas of East Concord where 3 to 5 housing units are 6 to 8 feet above the streambed. The stage prior to the dam failure would be 7 feet in the settlement of East Concord. This increase in the flood wave height is due to the channel configuration. The flood wave would have the potential for washing out several bridges; two railroad bridges and two town highway bridges in East Concord. The flood wave would cause appreciable damage and possible loss of life in three to five dwellings with the flood levels up to 2 to 4 feet above the first floor of these dwellings. It is probable that other housing units located in the fringe areas of the valley and others located downstream would suffer lesser damage from the resultant flood. Because of the possibility of the loss of more than a few lives, the dam is classified as High hazard. (Refer to Appendix D - Possible Flood Damage Area Map)

SECTION 6
EVALUATION OF STRUCTURAL STABILITY

6.1 Visual Observations

The visual inspection did not disclose significant indication of overall instability. However, there are three potential structural problems observed during the field inspection. One of the problems was the lack of erosion protection at the unpaved roadway which crosses the crest of the embankment near the left abutment and on a few bare spots on the crest of the embankment. The second problem is the grouted granite-block basin in the emergency spillway. The slush - grout between the granite blocks which pave the downstream slope of the emergency spillway is missing in some places. This grout was apparently placed after erosion of the soil under the granite blocks during earlier flows over the spillway. It is not possible to determine on the basis of the visual inspection above whether the grouting serves an essential purpose in preventing erosion of the granite - block paving and underlying soils, or whether it might (if completely intact) result in water pressure building up under the paving which might endanger the spillway. The third problem observed during the field inspection was the concrete erosion at the discharge end of the spillway culvert, this erosion would cause the collapse and blockage of the culvert.

6.2 Design and Construction Data

No design data was available for the original dam construction.

6.3 Post Construction Data

In 1969, under the direction of the State of Vermont Department of Water Resources, DuBois & King, Inc., of Randolph, Vermont, redesigned the Miles Pond outlet structure. At the time of reconstruction, there was no structural stability analysis performed on the outlet structure or earth embankments. Although the original design drawings concerning the 1969 reconstruction are available, the drawings do not appear to be completely accurate. Changes such as alignment of the left concrete abutment and small discrepancies in elevations are evident. These changes probably occurred during construction. For these reasons a structural stability analysis was not performed using the design drawings configurations. The structural stability analysis was completely based on the visual inspection of the dam.

6.4 Seismic Stability

This dam is located in Seismic Zone 2 and, in accordance with the Phase I Guidelines, does not warrant seismic analysis.

SECTION 7
ASSESSMENT, RECOMMENDATIONS, AND REMEDIAL MEASURES

7.1 Assessment

a. Condition. On the basis of the visual inspection, the dam is in good condition. However, due to the hydraulic inadequacy of the emergency spillway the overall condition is judged to be fair.

b. Adequacy of Information. There is a significant amount of design information available concerning the 1969 reconstruction, but as explained in Section 2.4(c) the accuracy of the original design drawings is questionable. The information on the actual 1969 reconstruction as explained in Section 2.4(b) was recorded randomly due to the fact that full-time resident inspection was not provided. Consequently, emphasis was placed upon the findings of the visual inspection and sound engineering judgment.

c. Urgency. The recommendations presented in Section 7.2 and 7.3 should be carried out within one year of receipt of this report by the owner.

7.2 Recommendations

The following investigations and needed corrections should be performed under the direction of a registered engineer qualified in the design and construction of dams.

(1) Design adequate erosion protection for the embankment section of the dam;

(2) Investigate the granite - block paving of the emergency spillway (including the slush grout between the blocks and the underlying soils) and design remedial measures if needed;

(3) Repair concrete erosion on the discharge end of the spillway culvert; and

(4) Perform a detailed hydrologic - hydraulic investigation to assess further the potential of overtopping the dam and the need for the means to increase project discharge capacity.

7.3 Remedial Measures

a. Operation and Maintenance Procedures

(1) A professional engineer qualified in the design and construction of dams should make a comprehensive technical inspection of the dam once every year and implement maintenance recommendations.

(2) Establish a surveillance program for use during and immediately after heavy rainfall and also a downstream warning program to follow in case of an emergency.

7.4 Alternatives

There are no practical alternatives consistent with the present use of the dam.

APPENDIX A
VISUAL CHECKLIST WITH COMMENTS

VISUAL INSPECTION CHECKLIST
PARTY ORGANIZATION

PROJECT Miles Pond Dam, Concord, Vermont

DATE Sept. 30, 1980

TIME 10:00

WEATHER Overcast

W.S. ELEV. _____ U.S. _____ DN.S.

PARTY:

1. Robert Wernecke, D&K
2. Charles J. Kissel, D&K
3. Stephen Knight, KCE
4. Ronald Hirschfeld
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

	PROJECT FEATURE	INSPECTED BY	REMARKS
1.	Geotechnical	Ronald Hirschfeld	
2.	Structural	Stephen Knight	
3.	Hydraulic/Hydrology	Robert Wernecke & Charles Kissel	
4.			
5.			
6.			
7.			
8.			
9.			
10.			

NOTE: All elevations are based on an assumed elevation of 102.5, taken from the left corner of the concrete cutoff wall.

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT

DATE Sept. 30, 1980

PROJECT FEATURE

NAME Robert Wernecke

DISCIPLINE

NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
DAM EMBANKMENT	
Crest Elevation	102.4 Feet
Current Pool Elevation	98.5 Feet
Maximum Impoundment to Date	Unknown
Surface Cracks	None observed
Pavement Condition	No pavement
Movement or Settlement of Crest	None observed
Lateral Movement	None observed
Vertical Alignment	Very slightly irregular
Horizonal Alignment	Good
Condition at Abutment and at Concrete Structures	Good
Indications of Movement of Structural Items on Slopes	No structures on slopes
Trespassing on Slopes	Slight evidence of trespassing
Sloughing or Erosion of Slopes or Abutments	Slight erosion at downstream toe
Rock Slope Protection - Riprap Failures	No riprap
Unusual Movement or Cracking at or Near Toe	None observed
Unusual Embankment or Downstream Seepage	None observed
Piping or Boils	None observed

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT

DATE Sept. 30, 1980

PROJECT FEATURE

NAME Robert Wernecke

DISCIPLINE

NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
DAM EMBANKMENT (Continued)	
Foundation Drainage Features	None observed
Toe Drains	None observed
Instrumentation System	None observed
Vegetation	Grass

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT

DATE Sept. 30, 1980

PROJECT FEATURE

NAME Robert Wernecke

DISCIPLINE

NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
DIKE EMBANKMENT	N/A
Crest Elevation	
Current Pool Elevation	
Maximum Impoundment to Date	
Surface Cracks	
Pavement Condition	
Movement or Settlement of Crest	
Lateral Movement	
Vertical Alignment	
Horizontal Alignment	
Condition at Abutment and at Concrete Structures	
Indications of Movement of Structural Items on Slopes	
Trespassing on Slopes	
Sloughing or Erosion of Slopes or Abutments	
Rock Slope Protection - Riprap Failures	
Unusual Movement or Cracking at or Near Toes	
Unusual Embankment or Downstream Seepage	
Piping or Boils	

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT

DATE Sept. 30, 1980

PROJECT FEATURE

NAME Robert Wernecke

DISCIPLINE

NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
OUTLET WORKS - CONTROL TOWER	N/A
a. Concrete and Structural	
General Condition	
Condition of Joints	
Spalling	
Visible Reinforcing	
Rusting or Staining of Concrete	
Any Seepage or Efflorescence	
Joint Alignment	
Unusual Seepage or Leaks in Gate Chamber	
Cracks	
Rusting or Corrosion of Steel	
b. Mechanical and Electrical	
Air Vents	
Float Wells	
Crane Hoist	
Elevator	
Hydraulic System	
Service Gates	
Emergency Gates	

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT

DATE Sept. 30, 1980

PROJECT FEATURE

NAME Robert Wernecke

DISCIPLINE

NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE	PRINCIPAL SPILLWAY (Stop log chute spillway)
a. Approach Channel	N/A
Slope Conditions	Good
Bottom Conditions	Good
Rock Slides or Falls	None
Log Boom	None
Debris	None
Condition of Concrete Lining	Not Applicable
Drains or Weepholes	Not Applicable
b. Intake Structure	
Condition of Concrete	Good
Stop Logs and Slots	Good condition

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT

DATE Sept. 30, 1980

PROJECT FEATURE

NAME Robert Wernecke

DISCIPLINE

NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
OUTLET WORKS - UPSTREAM END OF CONDUIT	Also see Outlet Structure and Outlet Channel
General Condition of Concrete	Good except for erosion at base of stop log support
Rust or Staining on Concrete	Slight rust under fence
Spalling	Negligible
Erosion or Cavitation	None at this end
Cracking	Few small shrinkage cracks
Alignment of Monoliths	No monoliths
Alignment of Joints	Good
Numbering of Monoliths	N/A
Weepholes	Weephole at base of training wall on each side of spillway chute discharging minor amount of water, with rust staining of concrete below weephole.

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT

DATE Sept. 30, 1980

PROJECT FEATURE

NAME Robert Wernecke

DISCIPLINE

NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
OUTLET WORKS - DOWNSTREAM END OF OUTLET CONDUIT	
General Condition of Concrete	Poor
Rust or Staining	Slight staining (No rust)
Spalling	Moderate
Erosion or Cavitation	Servere, at invert of discharge end of concrete box culvert (erosion occurs for approximately 5 feet at the invert)
Visible Reinforcing	None except rebar left exposed at outlet end of conduit
Any Seepage or Efflorescence	No
Condition at Joints	Not observable
Drain Holes	Not applicable
Channel	
Loose Rock or Trees Overhanging Channel	Large bushes overhanging channel, large boulders and concrete rubble on banks of channel near conduit
Conditition of Discharge Channel	Fair

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT DATE Sept. 30, 1980-

PROJECT FEATURE NAME Robert Wernecke

DISCIPLINE NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
OUTLET WORKS - EMERGENCY SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	EMERGENCY SPILLWAY
a. Approach Channel	
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None near spillway
Floor of Approach Channel	Sediment to within 1-2 ft of crest on upstream side of weir
b. Weir and Training Walls	
General Condition of Concrete	Good
Rust or Staining	No rust, very slight staining
Spalling	Negligible
Any Visible Reinforcing	None
Any Seepage or Efflorescence	None
Drain Holes	None observed
c. Discharge Channel	
General Condition	Fair
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None
Floor of Channel	Cut-granite-blocks with slush mortar in joints

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT

DATE Sept. 30, 1980

PROJECT FEATURE

NAME Robert Wernecke

DISCIPLINE

NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
OUTLET WORKS - EMERGENCY SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS (Continued)	EMERGENCY SPILLWAY
Other Obstructions	None
Other Comments	Low discharges are controlled and diverted by small channel in emergency spillway into principal spillway

INSPECTION CHECKLIST

PROJECT Miles Pond Dam, VT

DATE Sept. 30, 1980

PROJECT FEATURE

NAME Robert Wernecke

DISCIPLINE

NAME Ronald Hirschfeld

NAME Stephen Knight

AREA EVALUATED	CONDITIONS
OUTLET WORKS - SERVICE BRIDGE	N/A
a. Super Structure	
Bearings	
Anchor Bolts	
Bridge Seat	
Longitudinal Members	
Underside of Deck	
Secondary Bracing	
Deck	
Drainage System	
Railings	
Expansion Joints	
Paint	
b. Abutment & Piers	
General Condition of Concrete	
Alignment of Abutment	
Approach to Bridge	
Condition of Seat & Backwall	

APPENDIX B
ENGINEERING DATA

APPENDIX B
ENGINEERING DATA

1. Design and Construction Records	
A. Records of 1969 Constructioon	
A.1 Executed copy of Contract & Specs.	Information from
A.2 Weekly Inspection Report	DuBois & King, Inc.
A.3 Miscellaneous Construction Photographs	Randolph, Vermont 05060
2. Past Inspection Reports	
A. Inspection Report	Appendix B, pgs. B-2
B. Other Inspection Reports	Department of Water Resources State of Vermont State Office Building Montpelier, Vermont 05062
3. Miscellaneous Data	
A. Preliminary Design Notes	Appendix B pgs. B-3 to B-10
B. Rules & Regulations on Water Surface Levels	Appendix B pgs. B-11 to B-12
C. Photographs of Dam Failure September 1970	Appendix B pgs. B-13 to B-15
D. Miles Pond Depth Chart	
4. Plans	
A. Original Design Drawings	Figures 1-4
B. Site Plan	Figure B-1
C. Photo Location Map	Figure B-2

Inspection Report not available

at time of collation.

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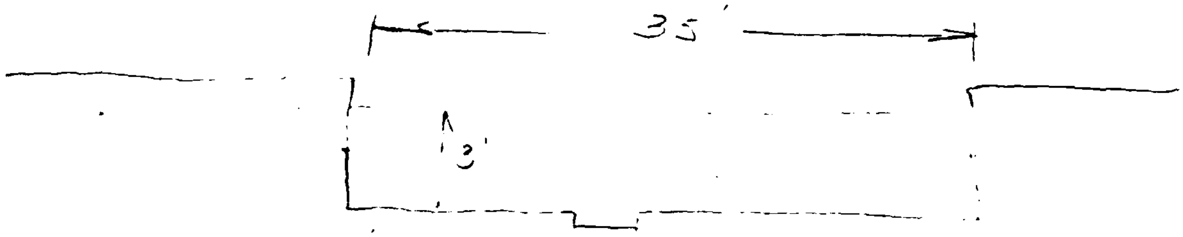
Randolph, Vermont

Job No. [illegible]   Sheet __ of __
Project [illegible]   Date [illegible]
Subject [illegible]   By [illegible]
Ch'k. by



$Q = 3.0\,B\,H^{3/2}$ $B = 35'$ $H = 3'$ $H^{3/2} = \sqrt{27} = 5.2$

$Q = (3.0)(35)(5.2) = \underline{547}$ cfs.

Runoff   A = 5 sq.mi = 3840 Acres.

25 year Freq.   i = 4.8   Duration - 5 min.

[illegible]   C = 0.16 [illegible]

$Q = 0.16(4.8)(3840) = \underline{2940}$ cfs.

Vol of Hikes Pond [illegible] 3.0'

3.0 × 7000 × 1000 = 21,000,000 cu.ft

Ponding Time(min) $\frac{21,000,000}{2940 \times 6.0} = \frac{2100}{17.6} = 119$ min
± 2 hrs.

Extreme Condition. Sat. ground C = 1.0 i = 4.8
3840 × 4.8 = 18,200 ± c/s. - 19 min
— w/no outflow —

DUBOIS & KING · Consulting Engineers

Job No. _____ · Randolph, Vermont · Sheet __ of __

Project _____ Date Apr.

Subject _____ By _____

_____ Chk. by _____

ASSUMPTION "B" - PROBABLE DAMAGE NEC. NO LOSS OF LIFE (NG S.
SIZE OF DRAINAGE AREA - 6 Sq Mi

ZONE I 6 hr - 10 Sq mi PROB MAX. PRECIP. 19 inches

DURATION hrs	% OF 5th - 100th M.	TOTAL RAIN INCHES
0-6	100	19
0-12	110	20.9
0-24	120	22.8
0-48	127	24.1

TIME HRS.	% 6 hr rain	ACCUM. RAIN	INCR
1	49	9.3	9.3
2	64	12.2	2.9
3	75	14.2	2.0
4	84	16.0	1.8
5	92	17.5	1.5
6	100	19.0	1.5

DESIGN STORM 1ST 6 hrs IN SEQUENCE 643125

RED. FAC. = 3.0

TIME IN HRS.	INCR RAIN INCHES	ACCUM.	ACC. REDUCED	INCR. RED.
0-1	1.5	1.5	0.5	0.5
1-2	1.8	3.3	1.1	0.6
2-3	2.0	5.3	1.8	0.7
3-4	9.3	14.6	4.9	3.1
4-5	2.9	17.5	5.8	0.9
5-6	1.5	19.0	6.3	0.5
6-12	1.9	20.9	6.9	0.3
12-24	1.9	22.8	7.6	0.7
24-48	1.3	24.1	8.0	0.4

HYDROLOGIC SOIL GRP "B" (ASSUMED)

LAND USAGE 85% HEAVILY WOODED } RUN-OFF CURVE NO
15% FIELD & PASTURE } SAY 56

TIME OF CONC. $T_c = \left(\frac{11.9 L^3}{H}\right)^{0.385}$ L = 3 mi/cs
H = 100 ft

$T_c = \frac{11.9(27)}{100}^{0.385} = 1.568$ Say 1.6 hr.

FIRST 6 hr. D = 1
SECOND 6 hr D = 6
SECOND 12 hr D = 12

$T_p = \frac{D}{2} + 0.6\,T_c$ $\qquad T_c = 1.6$ hr

$T_b = 2.67\,T_p$ $\qquad A = 6\frac{7}{8}$ mi.

$Q_p = \frac{484\,A\,Q}{T_p}$ $\qquad Q = 1.00$ inch

D = 1/2 hr $\quad T_p = \frac{1/2}{2} + 0.6(1.6) = 1.13$ $\qquad$ From 0-6 hr.

$T_b = 2.67(1.46) = 3.01$

$Q_p = \frac{484(6)(1.0)}{1.13} = 2570$

D = 6 hr. $\quad T_p = \frac{6}{2} + 0.6(1.6) = 4.07$

$T_b = 2.67(3.96) = 10.9$

$Q_p = \frac{484(6)(1.0)}{4.07} = 715$

DuBOIS & KING · Consulting Engineers

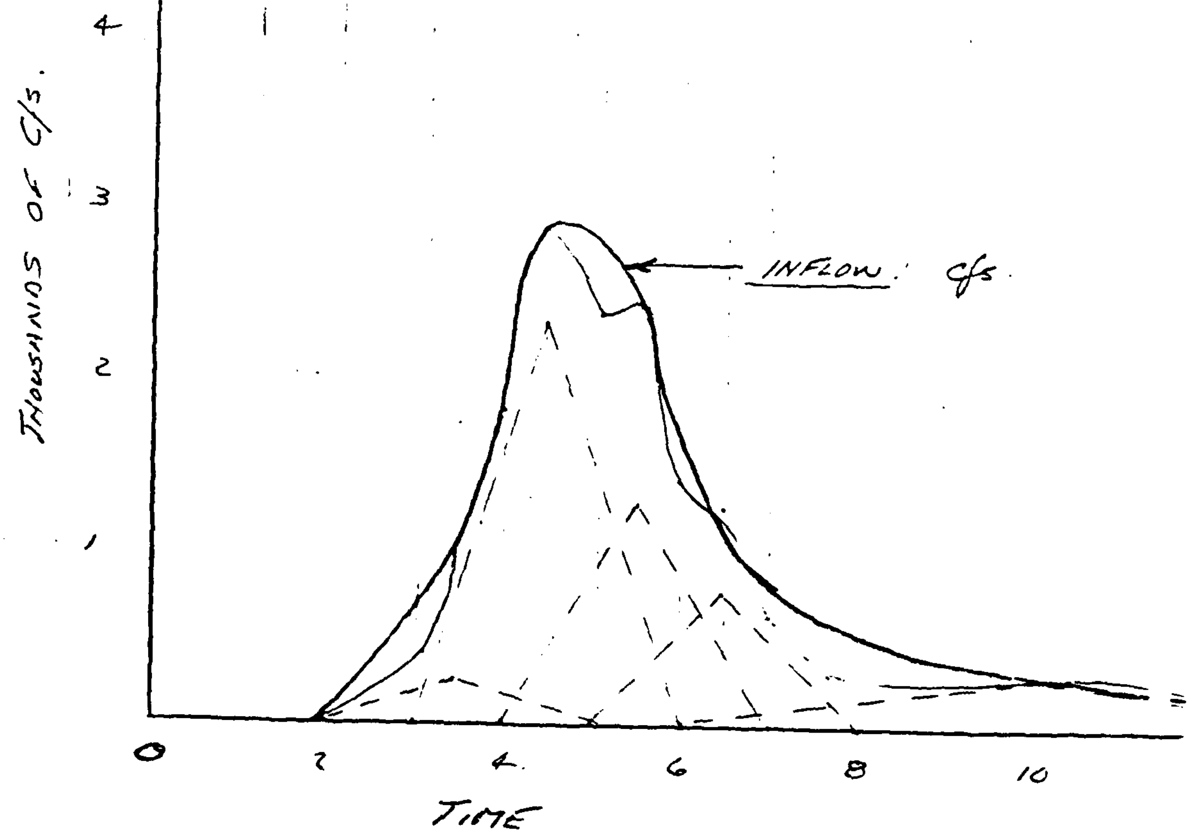
Randolph, Vermont

Job No. 6818
Project Miles Pond — [illegible]
Subject Pond Inflow
Design Storm - Assumption "B"

Sheet _ of _
Date [illegible]
By [illegible]
Ch'k. by ____

(Tp for D = 1hr = ± 1.5)

Time hrs.	Incr Rain	Accum Rain	Run-off Acc.	Run-off Incr.	qp for 1.00 inch	qp for incr. Runoff	Incr. Hydrograph: Begin time	Peak time	End time
0-1	0.5	0.5	0	0	2570	0	0	0	0
1-2	0.6	1.1	0	0	2570	0	1	2.5	—
2-3	0.7	1.8	0.1	0.1	2570	257	2	3.5	5.0
3-4	3.1	4.9	1.0	0.9	2570	2310	3	4.5	6.0
4-5	0.9	5.8	1.5	0.5	2570	1285	4	5.5	7.0
5-6	0.5	6.3	1.8	0.3	2570	770	5	6.5	8.0
6-12	0.3	6.9	2.2	0.4	715	286	6	10.1	15.9



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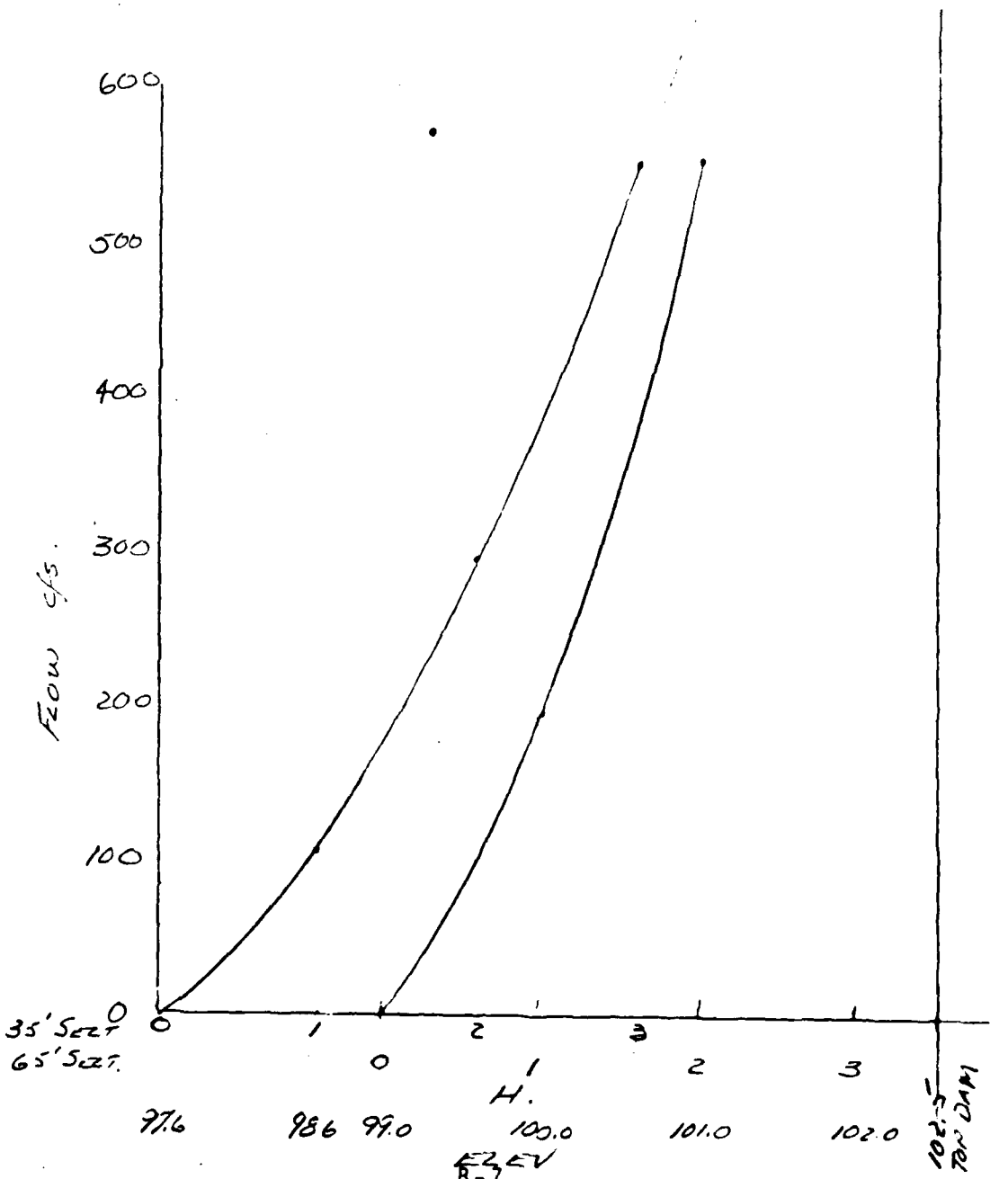
Job No. [illegible] · Randolph, Vermont · Sheet [illegible]
Project [illegible] · Date [illegible]
Subject [illegible] · By [illegible]
Chk. by [illegible]

SPILLWAY CURVES

102.5 | ← 65' → | ← 35' → | TOP 102.5
97.6 | 97.6 |



B-7

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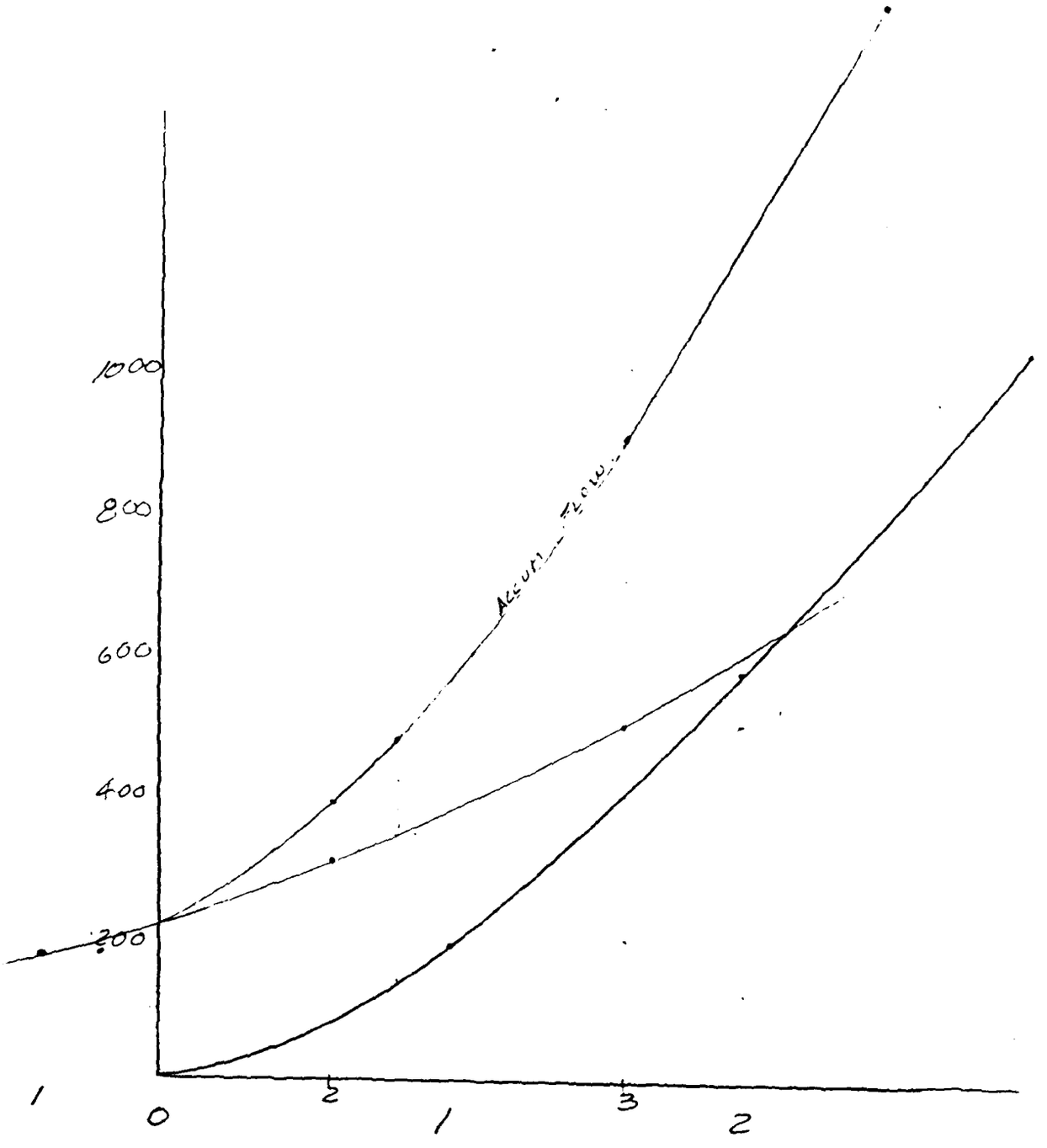
Randolph, Vermont

Job No. 5215
Project [illegible]
Subject
Sheet 6 of
Date
By TC
Ch'k. by

SPILLWAY CURVES
35' SECT - 65' SECT & ACCUM.



DUBOIS & KING · Consulting Engineers

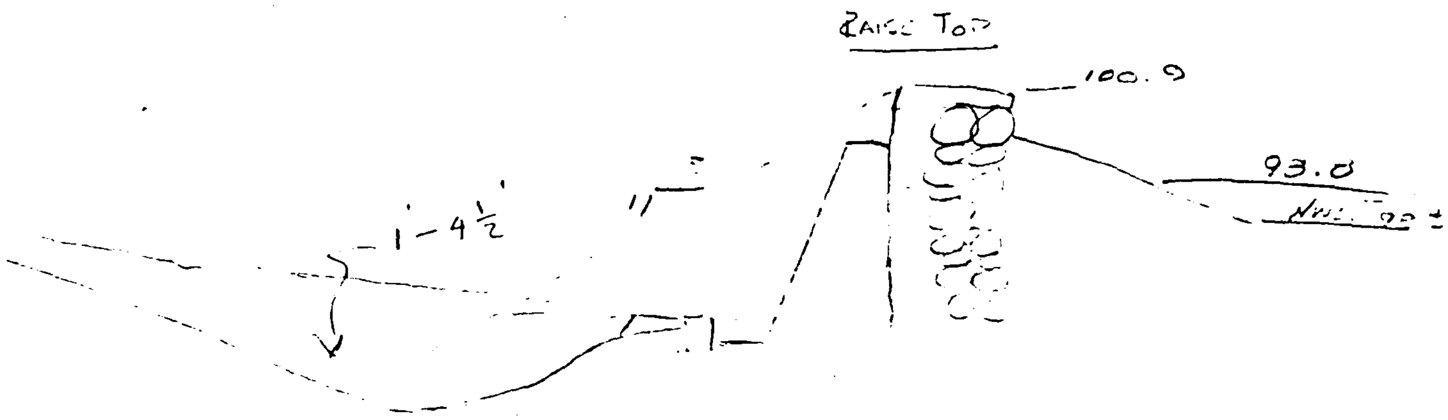
Randolph, Vermont

Job No. 6316 Sheet 1 of 1
Project [illegible] - RESERV. Date APR 11
Subject _____ By _____
Chk. by _____

RISE IN POND LEVEL DURING INFLOW. 7×10^6 Cf. / ft.

TIME	AVG. INFLOW RATE	(0.36×10^6) INFLOW C.f.	RISE IN. FT.
0 - 1	0		
1 - 2	0		
2 - 3	500 cfs.	1,800,000	
3 - 4	1100 cfs.	3,960,000	
4 - 5	2800 cfs.	10,100,000	
5 - 6	2400 cfs	8,650,000	
6 - 12	600 cfs.	13,000,000	

TIME	AVG INFLOW RATE	NET INFLOW RATE	INFLOW	ACCUM. INFLOW	RISE	OUTFLOW RATE
0 - 1						
1 - 2						
2 - 3	500 cfs	500 cfs.	1,800,000	1,800,000	0.257'	30 cfs.
3 - 4	1100 cfs	1070 cfs.	3840000	5,640,000	0.805'	80 cfs
4 - 5	2800 cfs.	2720 cfs	9800000	15,440,000	2.21'	480 cfs.
5 - 6	2400 cfs	1920 cfs.	6700000	2,234,000	3.2'	960 cfs
6 - 12	600 cfs.	-360 cfs				



Drainage Area (2 Sq.Mi.) 6 Sq.mi. ±

Make orig out [illegible]

Try removal

Underground Power line? or Relocate Bldg?

STATE OF VERMONT

WATER RESOURCES BOARD

Establishment of Surface Water	Before the
Levels at Miles Pond in the	Water Resources Board
Town of Concord	

RULES AND REGULATIONS

Proceedings having been duly held by the Vermont Water Resources Board in accordance with Title 10, V.S.A., Section 575 (a) (11), for the purpose of making and promulgating rules and regulations governing the surface water levels of Miles Pond, a natural lake constituting public water of Vermont, located in the Town of Concord, Vermont whereby, upon hearing all interested parties, preliminary findings of fact were duly issued dated February 27, 1969, and no exceptions to such preliminary findings having been filed with the said Board;

NOW THEREFORE, in consideration of all said proceedings and said preliminary findings of fact and subsequent investigations, the Vermont Water Resources Board does hereby adopt said preliminary findings No. 1 through No. 6 and the Vermont Water Resources Board does hereby make and promulgate the following rules and regulations governing the surface water levels of said Miles Pond:

1. That following the construction of the dam at the outlet of Miles Pond by the Vermont Department of Water Resources, the surface water level of Miles Pond in the Town of Concord shall be maintained at 98.50 feet, assumed datum, except during the period October 15 to May 15 when the winter level of 1-1/2 to 2 feet below the established level is authorized.

2. That provision be made during the construction of the dam at the outlet of Miles Pond by the Vermont Department of Water Resources for a satisfactory method of surface water level manipulation below the elevation of 98.50 feet, assumed datum.

3. That the temporary lowering of the surface water levels, as established herein, for maintenance, clean-up, or other purposes, shall be at a time mutually agreeable to the majority of the affected parties, and upon written direction of the Vermont Water Resources Board.

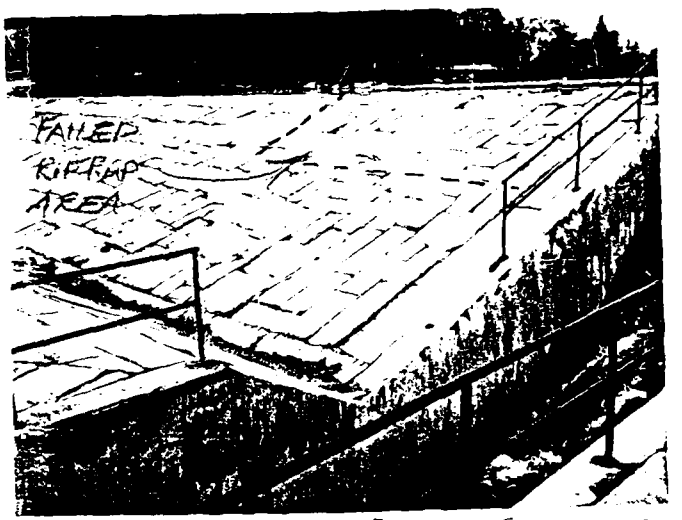
Done at Montpelier, Vermont, this 18th day of March 1969.

VERMONT WATER RESOURCES BOARD

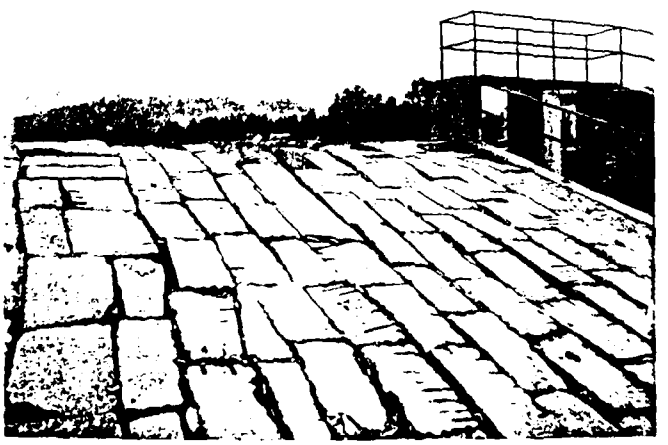
Deming Miller
Chairman

Walter J. Ellis
Member

Frederick H. Mehlman
Member

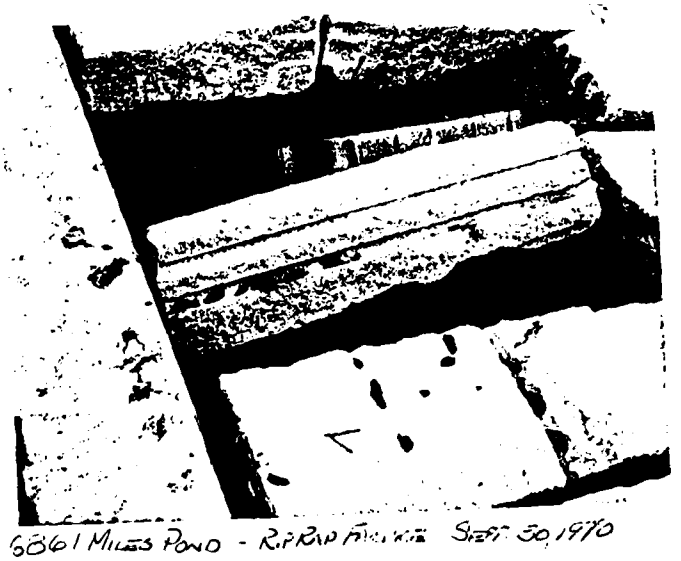


(226) MILES POND DAM - RIPRAP FAILURE SEPT 30, 1970

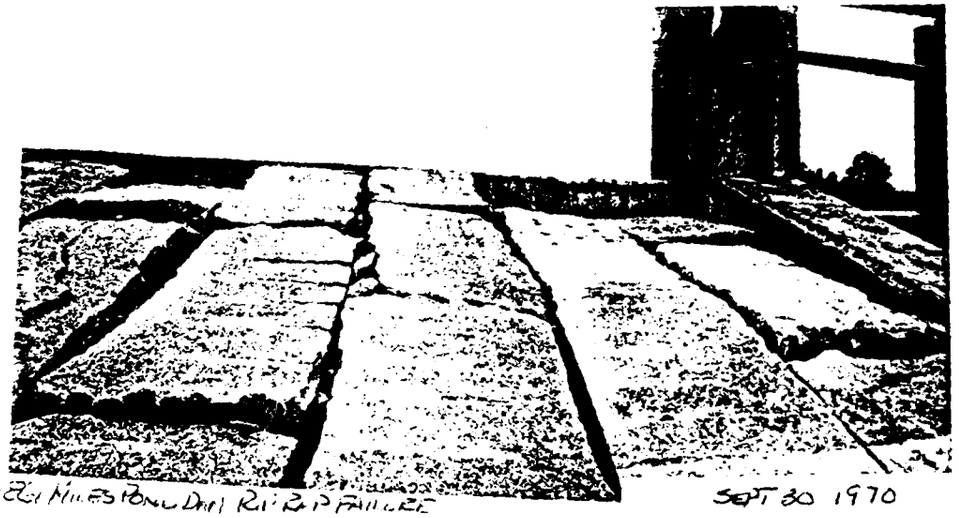


6866 / MILES POND DAM - RIPRAP FAILURE SEPT 30 1970

6861 Miles Pond Dam - Riprap Failure Sept 30, 1970

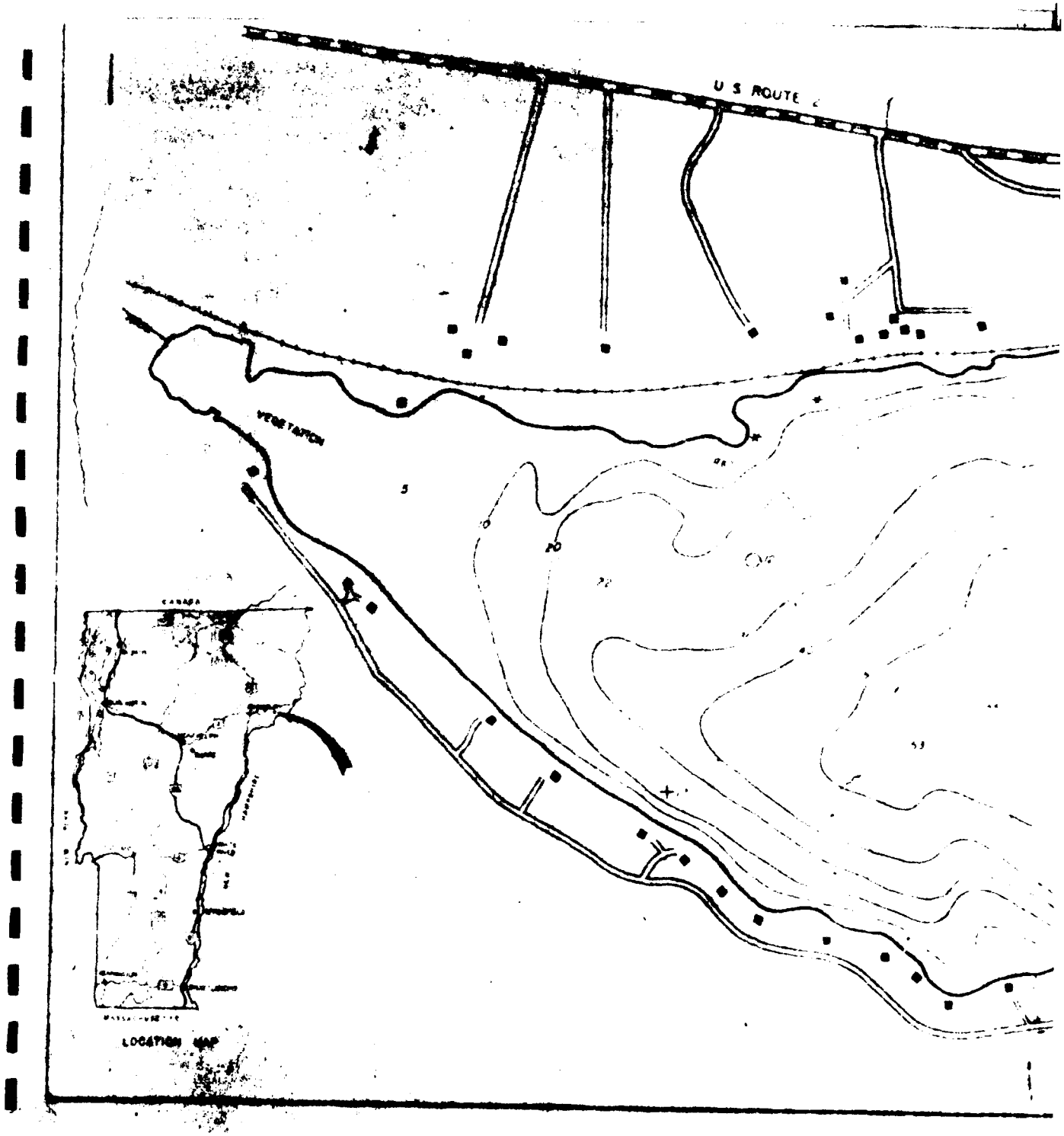


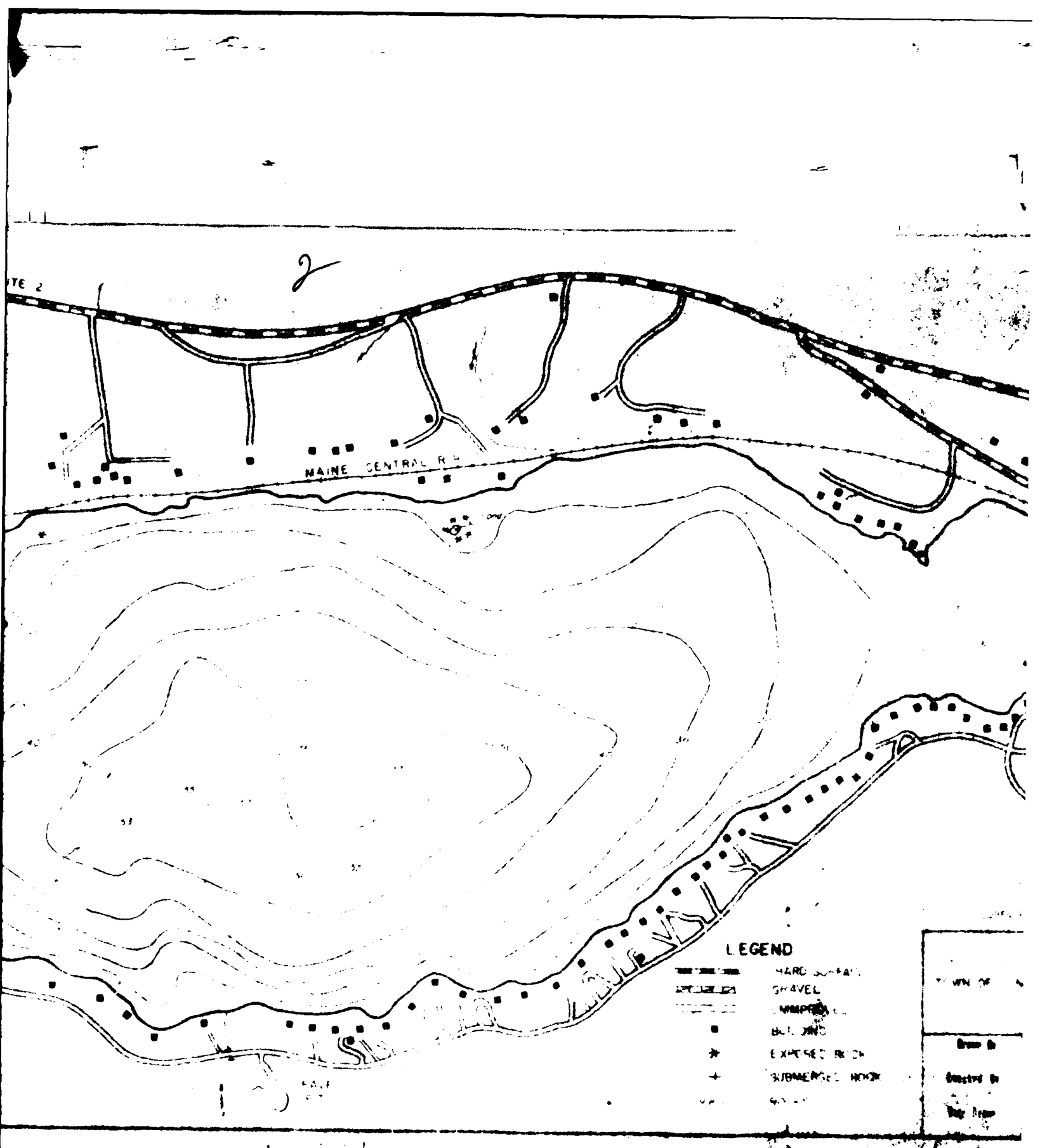
6861 Miles Pond - Riprap Failure Sept 30, 1970

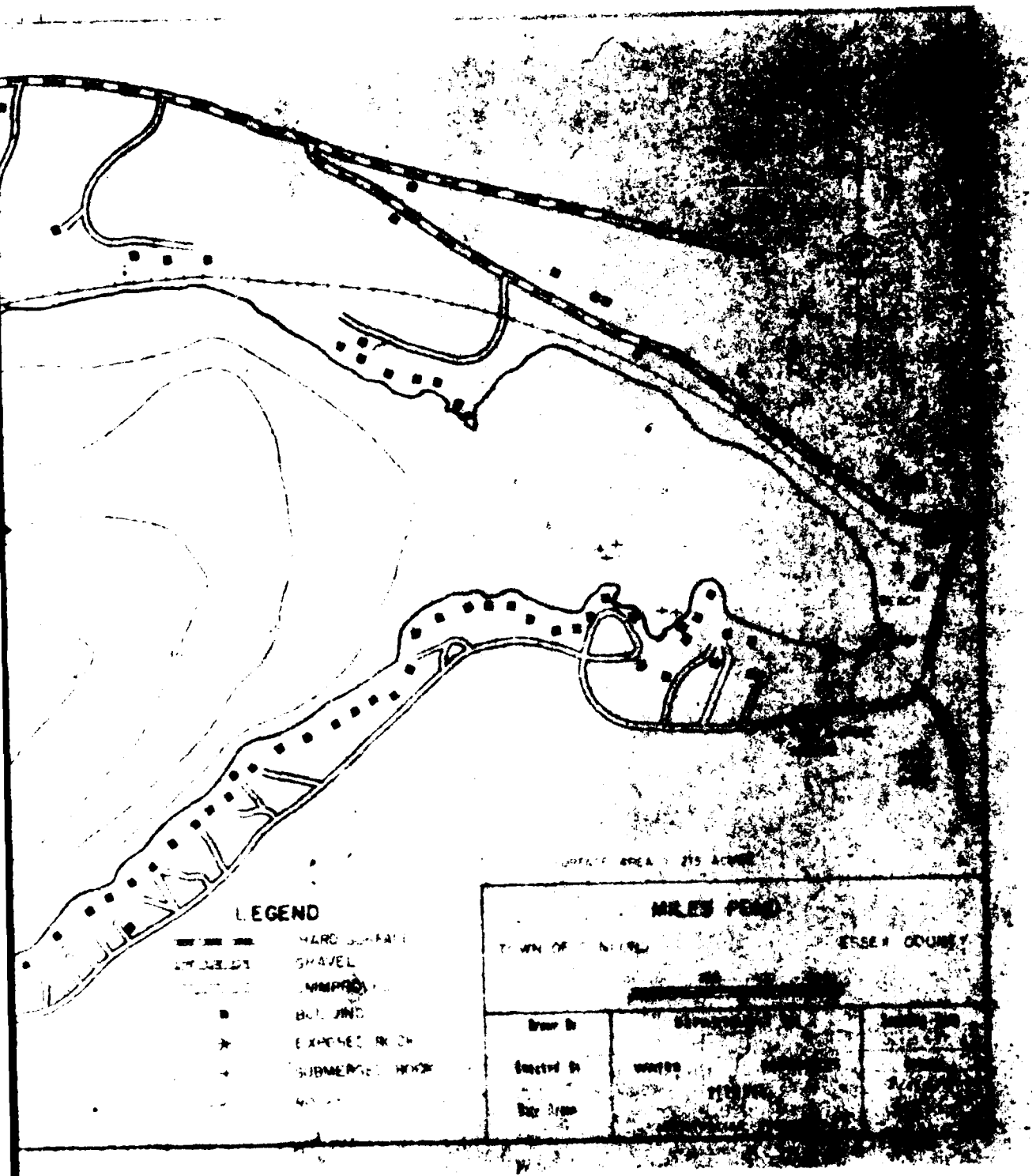


68-24 MILLSTONE DAM RIPRAP FAILURE SEPT 30 1970

68-24 MILLSTONE - RIPRAP FAILURE SEPT 30 1970

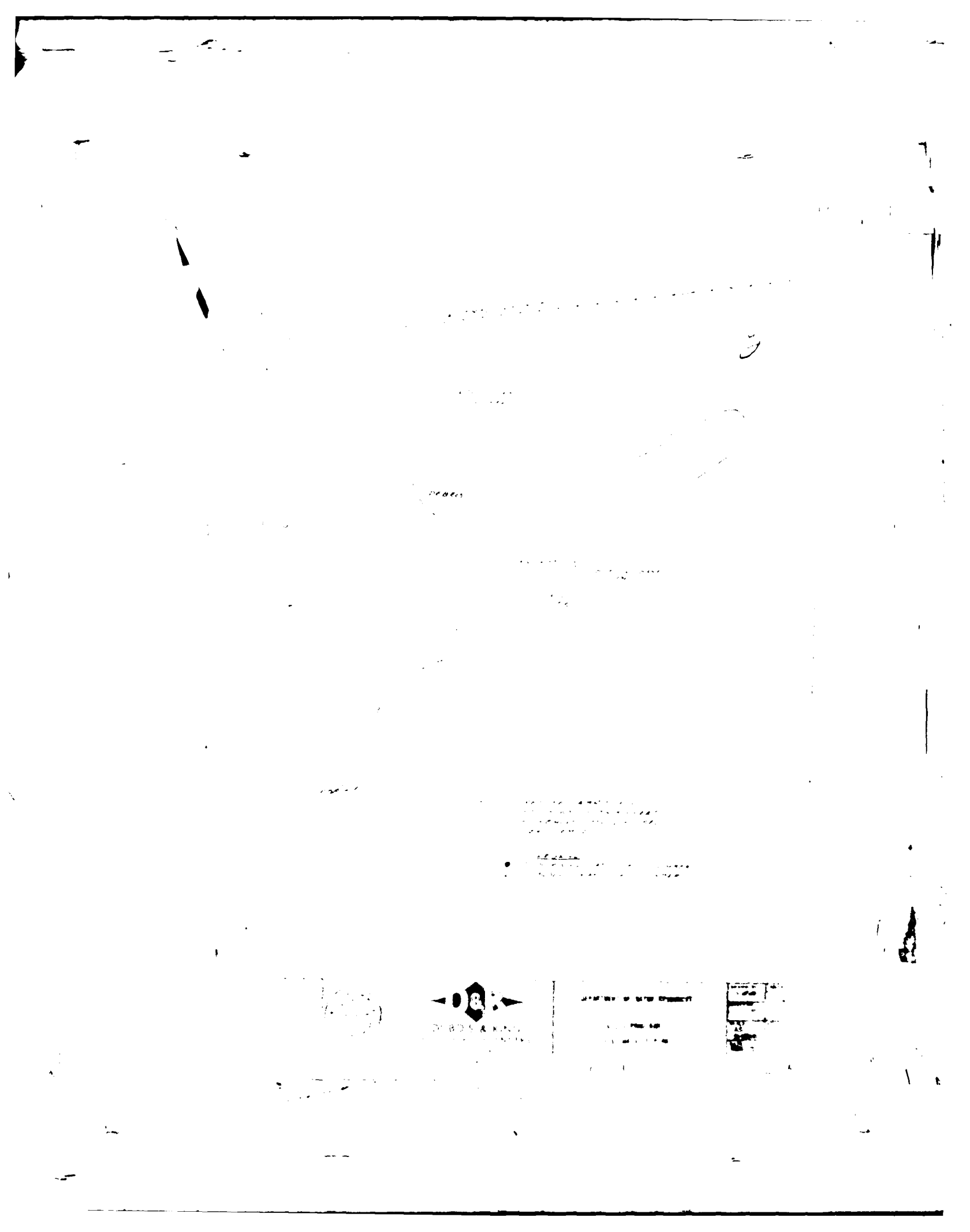

U S ROUTE
VEGETATION
LOCATION MAP


MAINE CENTRAL R.R.
LEGEND
GRAVEL
EXPOSED ROCK


LEGEND
GRAVEL
MILES POND

ASSUMED DATUM

ORIGINAL DRAWING PREPARED BY
DUBOIS & KING RANDOLPH, VERMONT 1968



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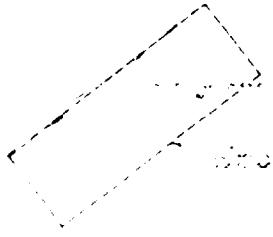
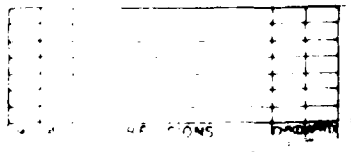
ASSUMED DATUM

ORIGINAL DRAWING PREPARED BY
DUBOIS & KING RANDOLPH, VERMONT 1968

REVISIONS





DUBOIS & KING
ENGINEERS – PLANNERS
RANDOLPH, VERMONT

DEPARTMENT OF WATER RESOURCES

WILES POND DAM

PROPOSED IMPROVEMENTS

FINAL DRAWING PREPARED BY
DUBOIS & KING RANDOLPH, VERMONT 1968

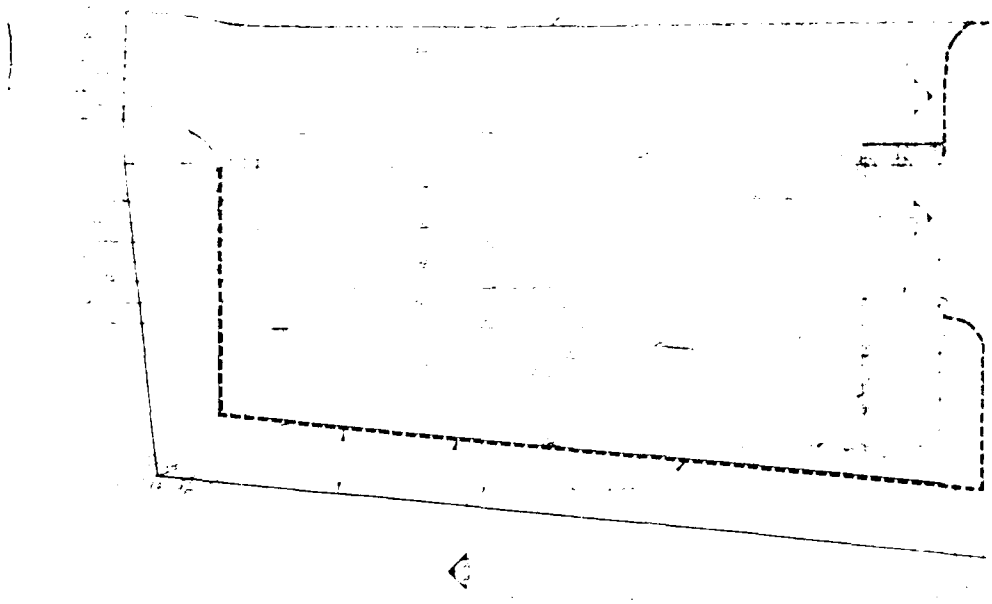
DUBOIS & KING
ENGINEERS – PLANNERS

DEPARTMENT OF WATER RESOURCES

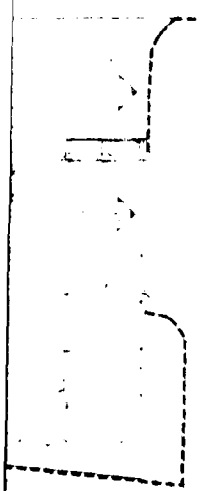
... RYLES POND DAM

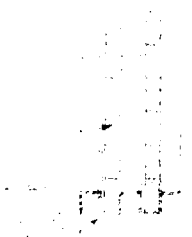
STRUCTURAL DETAILS

DESIGNED BY	PROJECT NO.
CHECKED	0000
SCALE AS SHOWN	DRAWING NO.
DATE NOV 86	

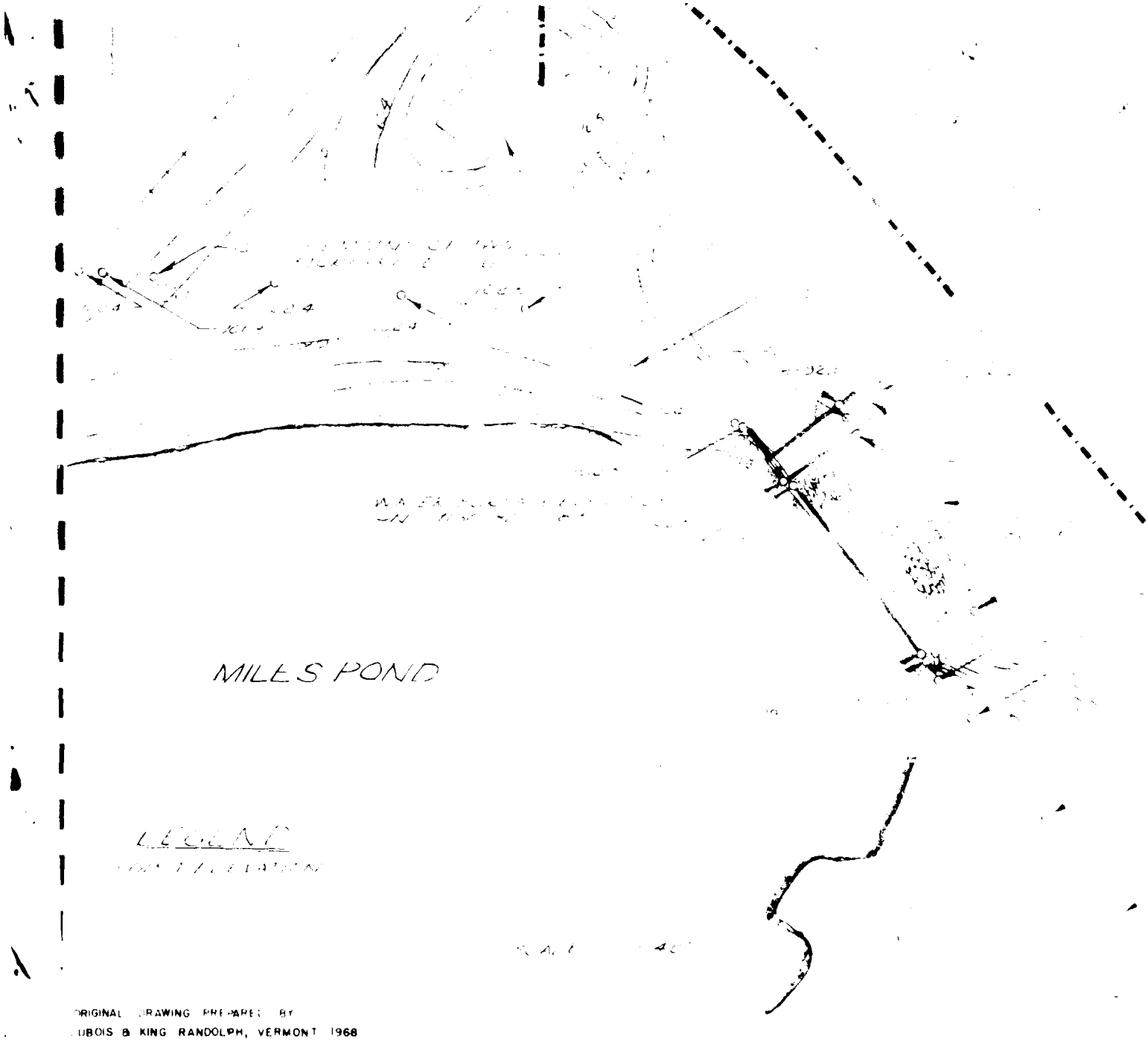


ORIGINAL DRAWING PREPARED BY
DUBOIS & KING RANDOLPH, VERMONT 1968

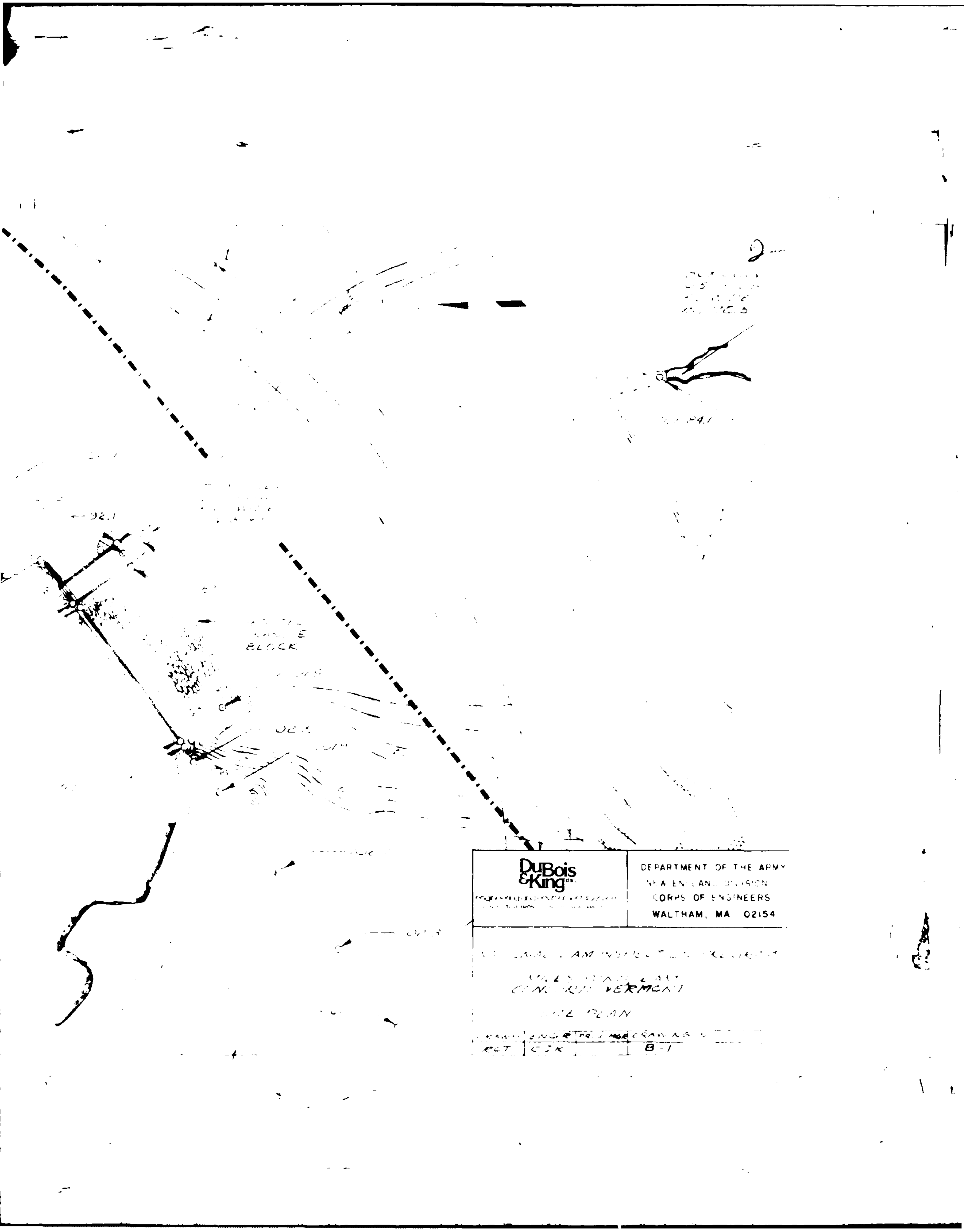




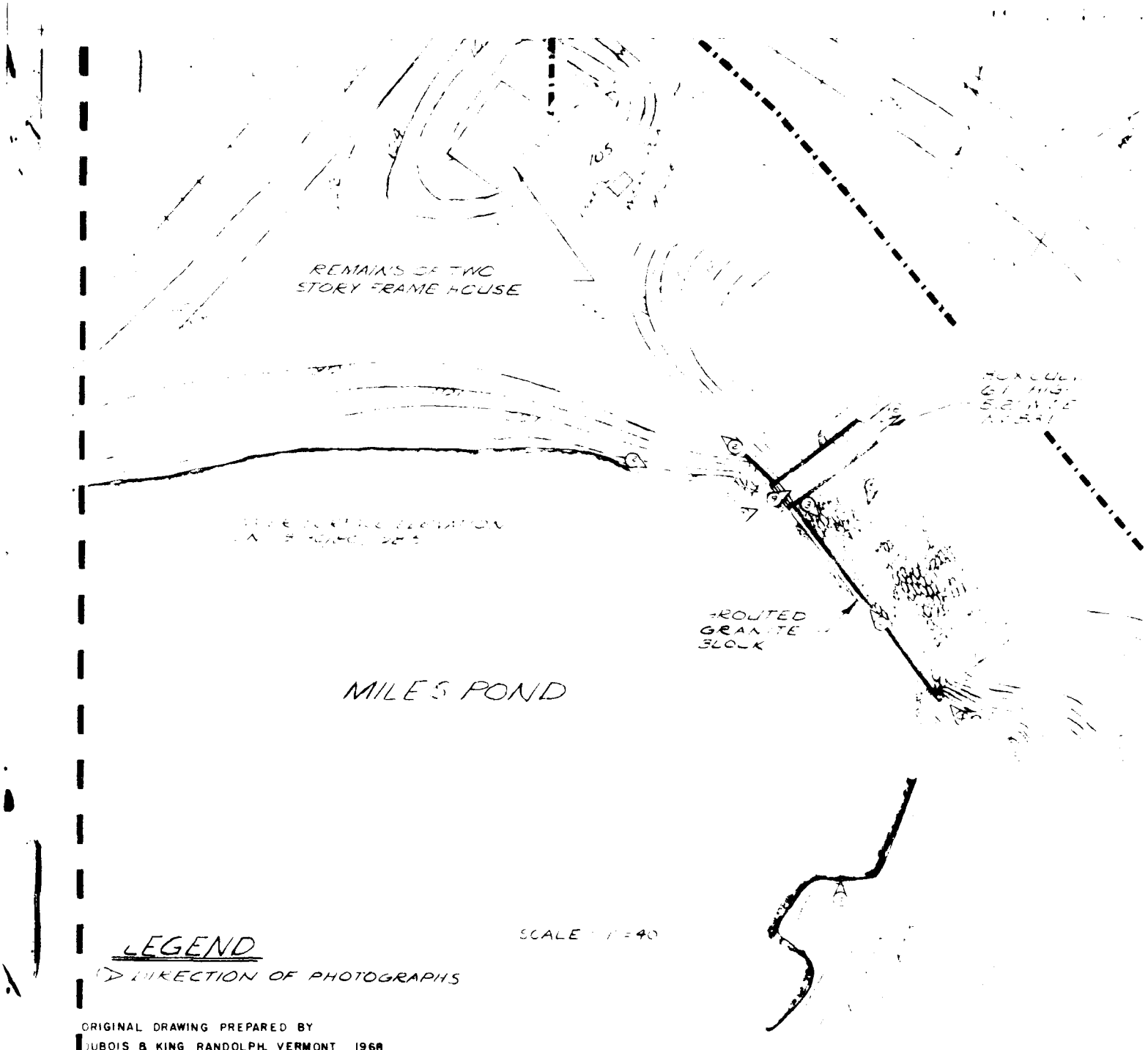
DuBois & King Inc.



ORIGINAL DRAWING PREPARED BY
DUBOIS & KING RANDOLPH, VERMONT 1968



92.7
BLOCK
DuBois &King inc.
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
WALTHAM, MA 02154
VERMONT
B-1



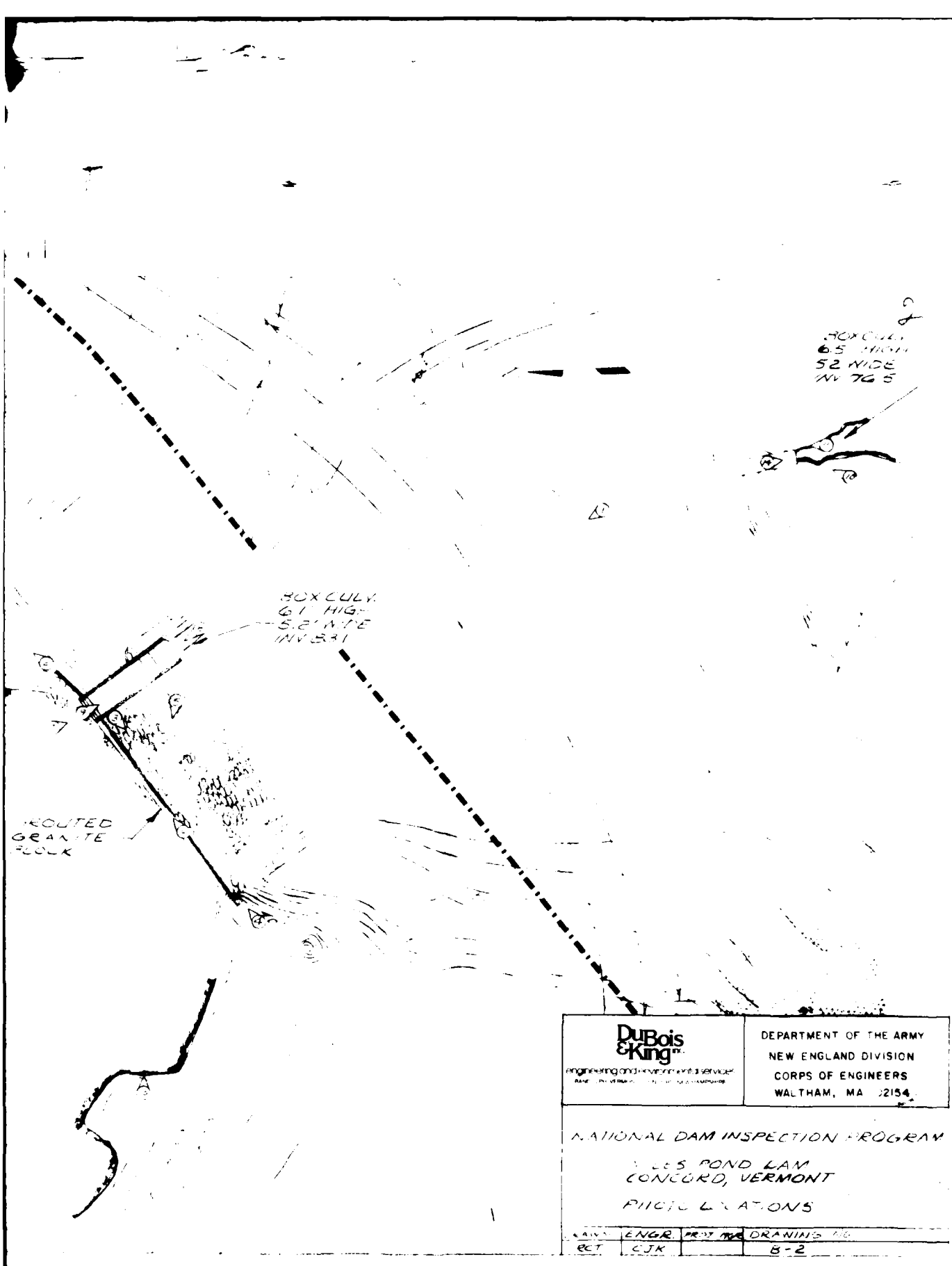
SCALE 1" = 40'

LEGEND

▷ DIRECTION OF PHOTOGRAPHS

ORIGINAL DRAWING PREPARED BY
DUBOIS & KING RANDOLPH, VERMONT 1968

PRECEDING PAGE BLANK-NOT FILMED



DuBois & King Inc.
engineering and environmental services

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MA 02154

NATIONAL DAM INSPECTION PROGRAM

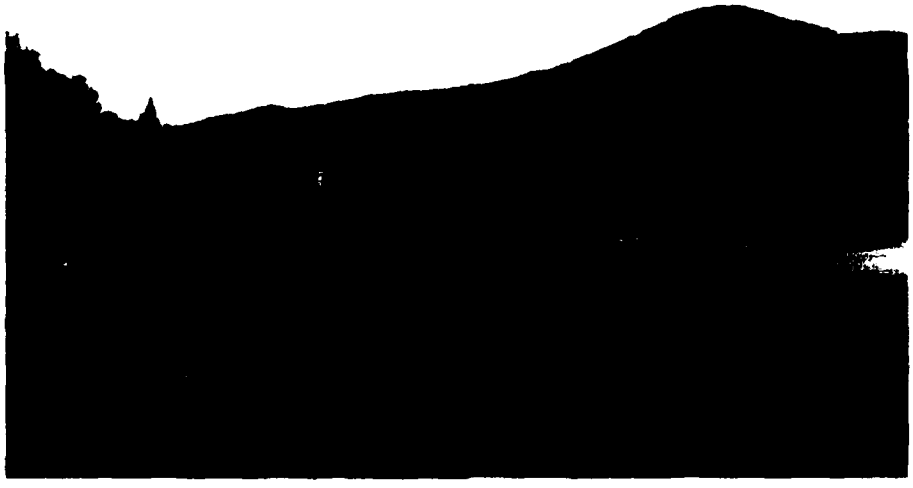
LEES POND DAM
CONCORD, VERMONT

PHOTOGRAPHS

DRAWN	ENGR.	PROJ. MGR.	DRAWING NO.
RCT	CJK		B-2

APPENDIX C
PHOTOGRAPHS

FOR LOCATION OF PHOTOS, SEE FIGURE B-2
LOCATED IN APPENDIX B



#1 - Looking upstream at dam, principal and emergency spillway

#2 - Crest of dam and left abutment viewed from principal spillway (stop log chute spillway)

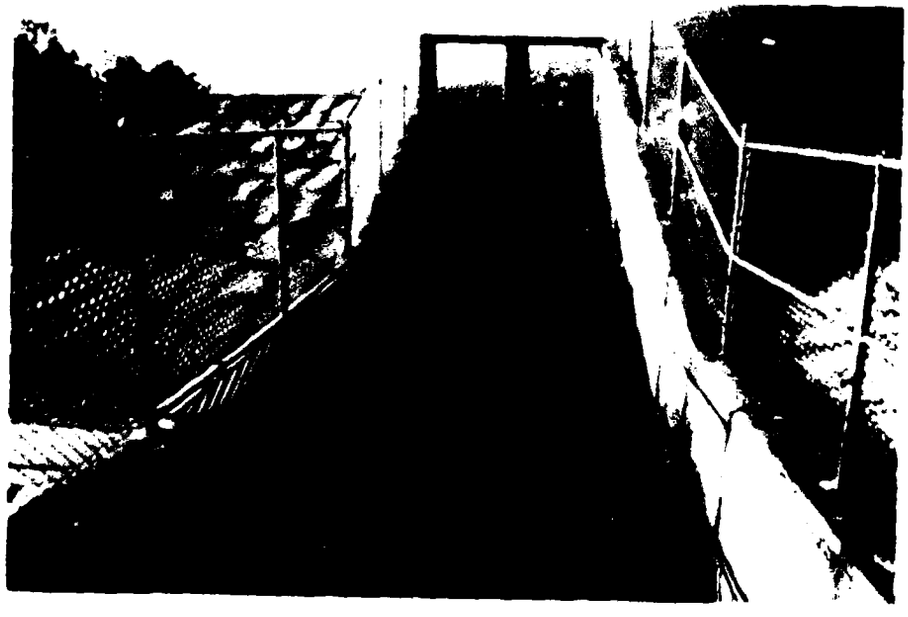
#3 - Crest of emergency spillway, crest of dam and right abutment viewed from principal spillway (stop log chute spillway)

#4 - Emergency spillway viewed from right end of spillway

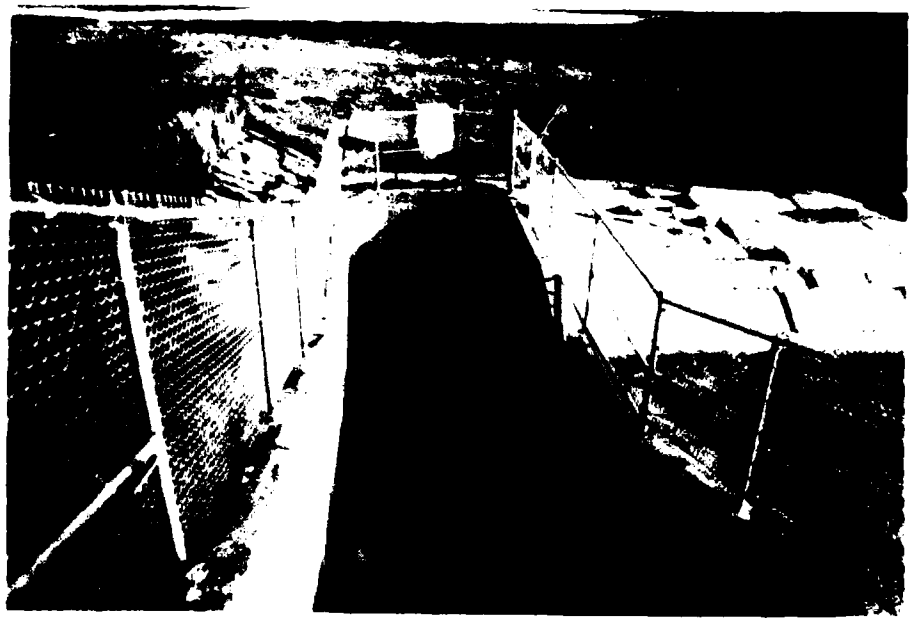
#5 - Grouting failure on downstream face of the granite-block emergency spillway basin

#6 - ½ inch crack between 12 inch concrete cutoff wall and the grouted granite-block emergency

#7 - From left bank, looking downstream, at grassed waterway downstream of emergency spillway



#8 - Looking upstream at principal spillway (stop log chute spillway)



#9 - Looking downstream, from stop log structure, at the downstream end of the principal spillway (chute spillway and concrete box culvert)

#10 - Looking upstream at the discharge end of the principal spillway (concrete box culvert)

#11 - Looking upstream at left invert side of the discharge end of the concrete box culvert

#12 - Viewed from the left bank looking downstream at principal and emergency spillway

#13 - Viewed from the right bank looking downstream at emergency and principal spillway

#14 - Looking downstream at discharge channel at discharge end of principal spillway

APPENDIX D
HYDROLOGIC & HYDRAULIC CALCULATIONS

Job No. 90E55 Sheet 1 of 30
Project Hill Pond Dam Date 12-15-90
Subject Drainage Area By JK Ch'k. by

From U.S.G.S. Littleton, Vt.-N.H. quadrangle
scale 1:62500

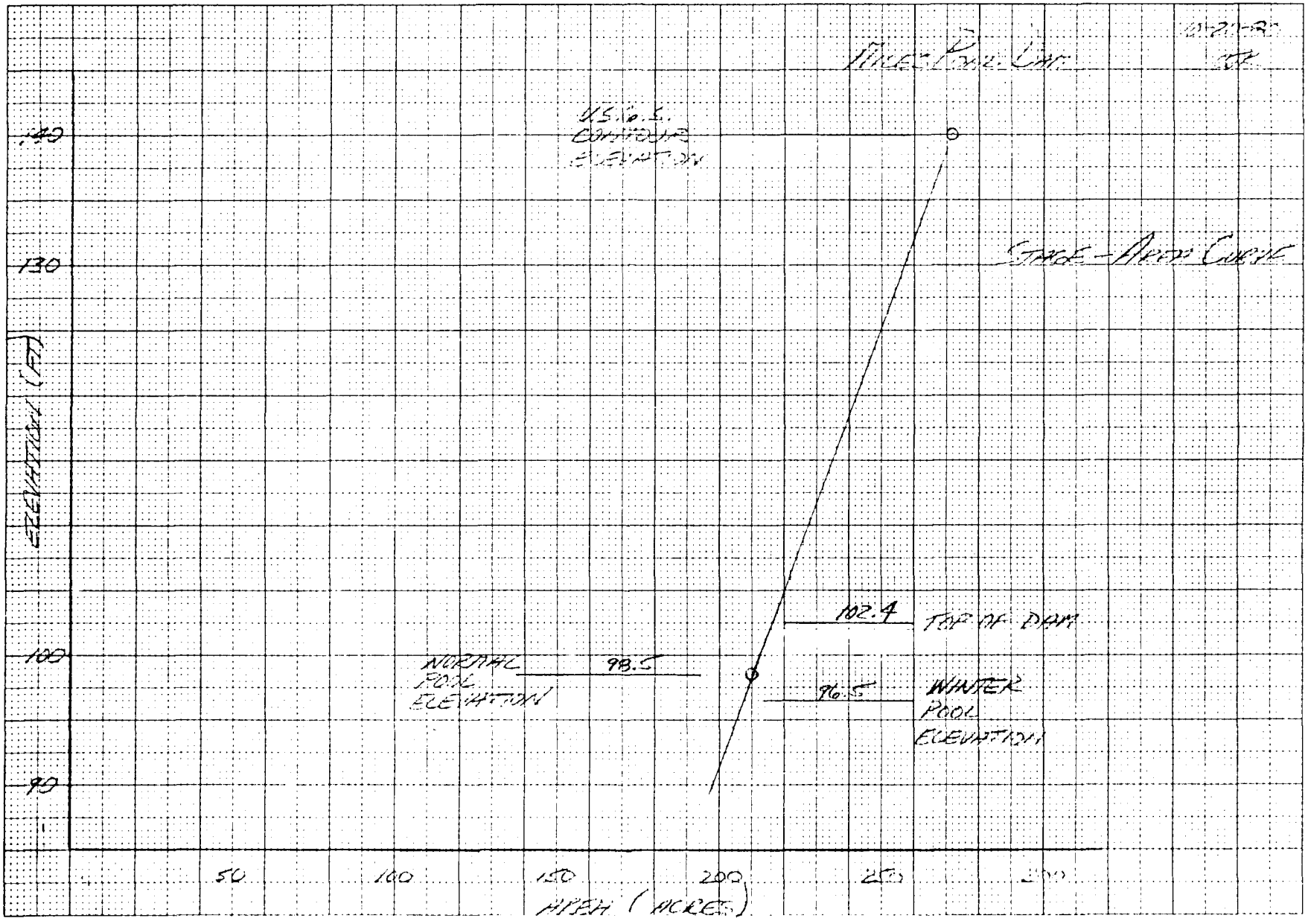
Planimeter Readings

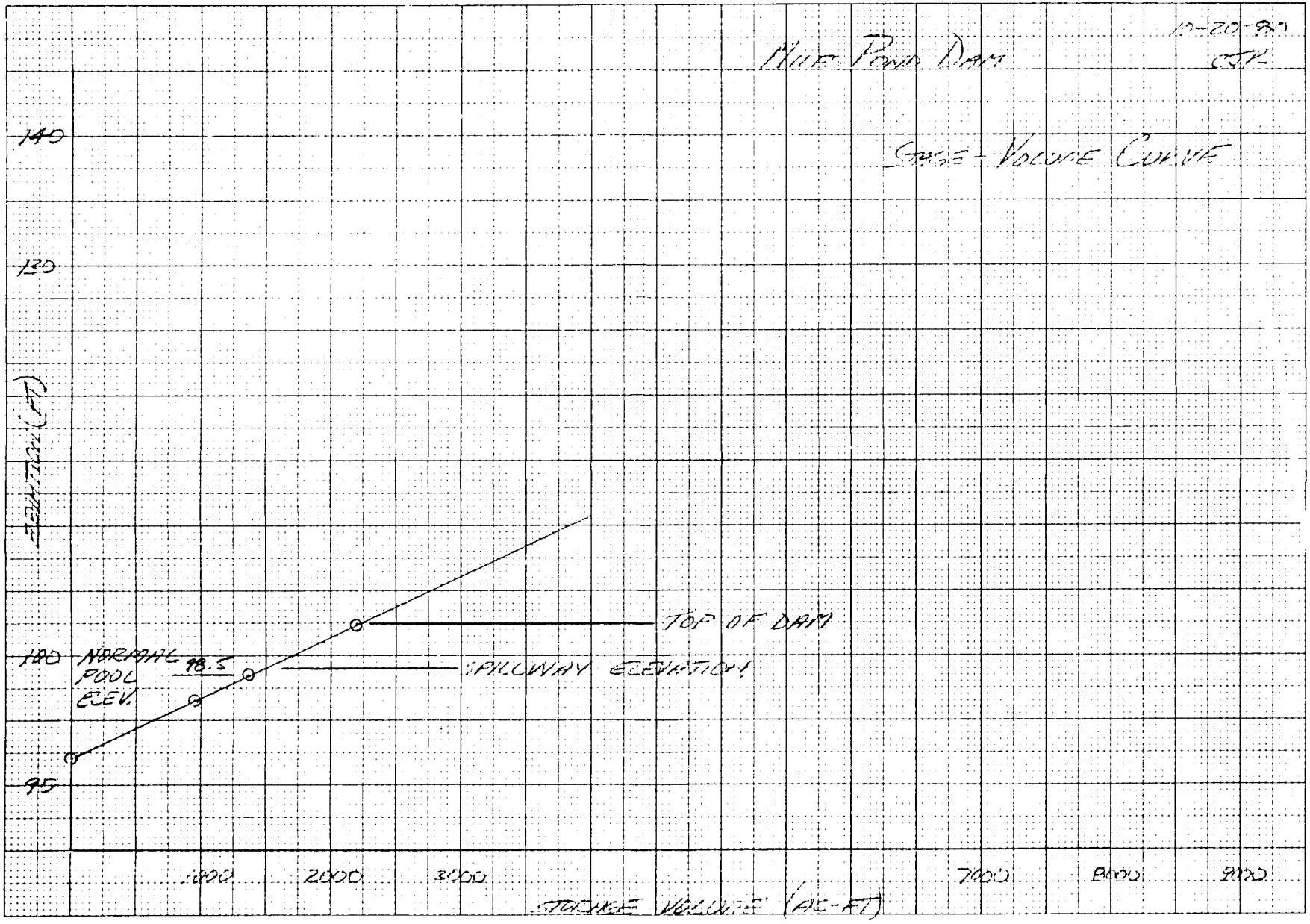
20.00	
26.85	6.85
33.70	6.85
40.55	6.85

$6.85\ in^2 (0.972) = 6.7\ mi^2$

Ave. Reading = $6.85\ in^2$

Drainage Area = $6.7\ mi^2$





Job No. 80455 Sheet 4 of 30
Project Miles Pond Dam Date 10-20-80
Subject Stage - Volume Curve By JK Ch'k. by

DATA OBTAINED FROM U.S.G.S. MAP MILES POND VT.-NH. (7.5 MINUTE) SCALE 1:24000 (1964)

ELEVATION		AREA (ACRES)	$\frac{A_1+A_2}{2}$	DEPTH (FT)	INCREMENTAL VOLUME (AC-FT)	TOTAL VOLUME (AC-FT)
96.5	WINTER DRAWDOWN ELEVATION	207.5 ②	208.9	2	417.8	949 ④
98.5	NORMAL POOL ELEVATION	210.2 ①		6.5 ③	—	1367
102.4	TOP OF DAM	216.2 ②	213.2	3.9	831.9	2199 ④
140	U.S.G.S. CONTOUR ELEVATION	271.8 ①				

① MEASURED FROM THE U.S.G.S MAP SCALE 1:24,000

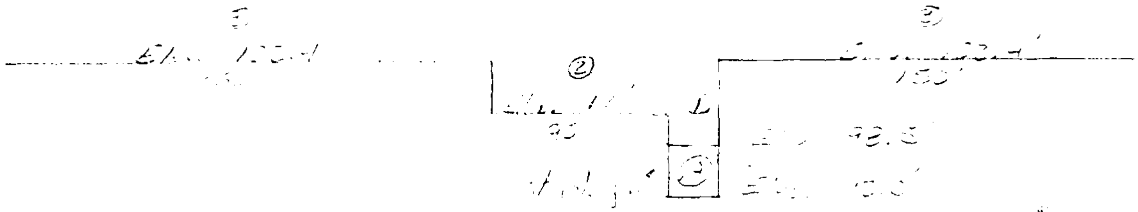
② TAKEN FROM STAGE-AREA CURVE DEVELOPED FROM U.S.G.S. MAP

③ TAKEN FROM THE VERMONT DEPARTMENT OF WATER RESOURCES SCREENING MAP FOR MILES POND, REVISED DATED 7-11-73.

④ CALCULATED USING AREAS OBTAINED FROM STAGE-AREA CURVE DEVELOPED FROM U.S.G.S. MAP

Job No. 11?55 Sheet 5 of 30
Project Milton Pond Dam Date 10/17/8?
Subject Hydraulics – Hydrology By ___ Ch'k. by ___

Discharge Curve



[illegible]	Length	[illegible]	Coef.*
1	8.67	[illegible]	[illegible]
[illegible]	8.67	92.0'	[illegible]4
[illegible]	90.0'	9?.5'	3.4
[illegible]	[illegible]	[illegible]	[illegible]6

[illegible] above information [illegible]
[illegible]
[illegible]

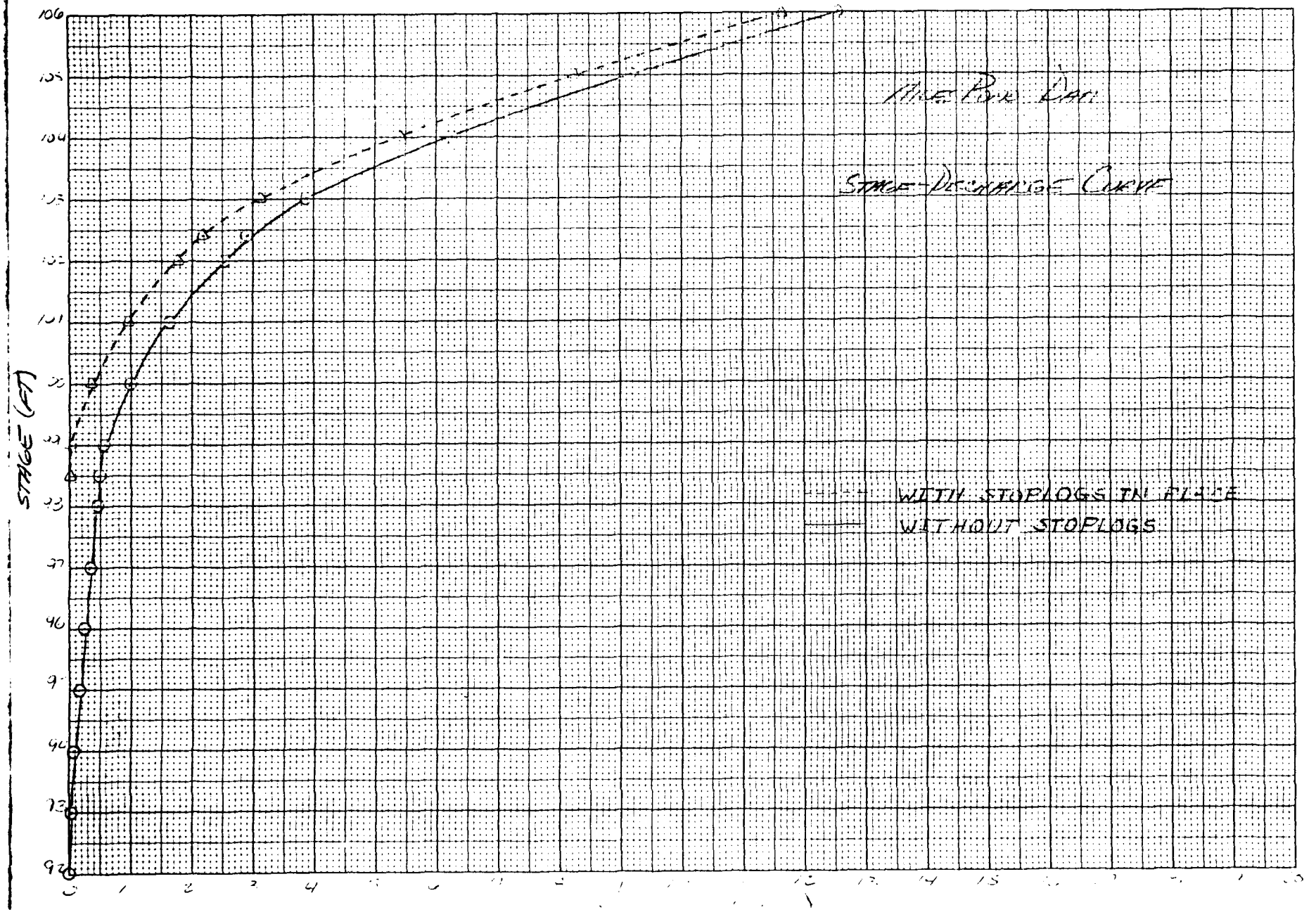
* [illegible] coefficients [illegible] taken from the [illegible] of Hydraulics" by Brater & King.

DuBois & King, Inc. *ENGINEERING AND ENVIRONMENTAL SERVICES* RANDOLPH VERMONT 05060

Job No. ______
Project ______
Subject ______

Sheet 6 of 30
Date ______
By ______ Ch'k. by ______

Elevation (ft)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
92						
93		[illegible]				[illegible]
94		[illegible]				[illegible]
95		[illegible]				[illegible]
96		[illegible]				[illegible]
97		[illegible]				[illegible]
98		[illegible]				[illegible]
98.5						[illegible]
99	11	[illegible]				[illegible]
100	57	[illegible]			[illegible]	[illegible]
101	123	[illegible]			[illegible]	[illegible]
102	204	[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	240	[illegible]	[illegible]		[illegible]	[illegible]
103	298	1,07[illegible]	[illegible]		[illegible]	[illegible]
104	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
105	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
106	641	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
107	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



Job No. 91855 Sheet 8 of 30
Project Miles Pond Dam Date 10-16-90
Subject HEC-1 HYDRAULIC-HYDROLOGY By JK Ch'k. by

BACK-UP COMPUTATIONS FOR HEC-1

DRAINAGE AREA = 6.7mi²

LOSS RATE:
SOIL CONSERV. SOILS MAP - ESSEX COUNTY, VT
MILES POND WATERSHED
PERC - MARLOW ASSOCIATION 70%
LYMAN - MARLOW - PERC ASSOCIATION 30%

PERC, MARLOW & LYMAN } GROUP C SOILS (FROM DESIGN OF SMALL DAMS p 527)

WATERSHED IS 100% WOODLANDS

THE CURVE NO. FOR THE MILES POND WATERSHED WAS OBTAINED FROM FIGURE H-2 (p 537)
USING: 3 INCHES OR MORE & THE HAINES IS MODERATELY COMPACT
FROM FIG. H-2(a) HC = 2
FROM FIG. H-2(b) CN: 73 (HYC-II)

I_a (INITIAL ABSTRACTION) = 0.74 IN (p 542)

CONST. LOSS RATE: 0.[illegible] IN/HR (p 542)

FROM DESIGN OF SMALL DAMS (p 45 & 46)
PMP = 19.5" (6 hr)(16mi²)
R_6 = 100
R_{12} = 111
R_{24} = 120

Job No. 8655 Sheet 9 of 30
Project Rice Pond Dam Date 10-16-80
Subject HEC-1 Hydraulics - Hydrology By GK Ch'k. by

SNYDER'S METHOD

$t_p = C_t (L L_{ca})^{0.3}$

t_p = LAG TIME

L = LENGTH OF MAIN WATERCOURSE TO UPSTREAM LIMIT OF DRAINAGE AREA = 4.36 MILES

L_{ca} = LENGTH ALONG MAIN WATERCOURSE TO POINT OPPOSITE THE CENTROID OF THE DRAINAGE BASIN = 1.99 MILES

C_t = SNYDER BASIN COEFFICIENT = 2.0 (ASSUMED AVERAGE)

C_p = SNYDER'S PEAKING COEFFICIENT = 0.62 (FROM CORPS HANDBOOK OF APPLIED HYDROLOGY)

U.S.G.S. MAPS 1:62500

$t_p = 2.0 (4.36 \times 1.99)^{0.3}$

$t_p = 3.8$ HRS

$\frac{23000'}{2 \text{ FPS}} = 3.2$ HRS

USE $t_p = 3.5$ HRS

Job No. 91865 Sheet 10 of 30
Project Miles Pond Dam Date 10-20-86
Subject Hydraulics - Hydrology By JK Ch'k. by

Miles Pond Dam - Located in Concord, Vt.

Classification - Size - Intermediate (max storage 2199 ac-ft)

Hazard - High (Rural community of East Concord, approx. 2 miles downstream of dam)

Basic Data:

Drainage Area = 6.7 mi^2

Reservoir

Winter Pool Elevation = 96.5 ft
Winter Pool Storage = 949 ac-ft
Normal Pool Elevation = 98.5 ft
" " Storage = 1367 ac-ft
Maximum Pool Elevation (Top of Dam) = 102.4 ft
" " Storage = 2199 ac-ft

Dam

Principal Spillway - Stop log chute spillway, into a discharge culvert

Emergency Spillway - 90 foot Concrete Sill into a grouted granite - block basin onto a grassed waterway.

Right and Left Embankments - Earthfill

Job No. 8605 Sheet 11 of 30
Project Lilac Pond Dam Date 11-19-81
Subject Hydrology - Hydraulics By SK Ch'k. by

HEC-1 WAS USED TO CALCULATE THE DESIGN FLOOD FOR LILAC POND DAM.

CLASSIFICATION SIZE - INTERMEDIATE
HAZARD - HIGH

DESIGN FLOOD

HYDROLOGIC EVALUATION GUIDELINES RECOMMENDS THE DESIGN FLOOD BE A FULL PMF.

Q_{PMF} = 12,025 CFS (SEE HEC-1 COMPUTER PRINTOUT)

$Q_{\frac{1}{2}PMF}$ = 6,018 CFS

EFFECT OF SURCHARGE STORAGE ON DESIGN FLOOD

THE EFFECTS OF SURCHARGE WERE MODELED USING THE HEC-1 FLOOD HYDROGRAPH PACKAGE.

DESIGN FLOOD	DURING ROUTING: MAXIMUM OUTFLOW (CFS)	DURING ROUTING: MAXIMUM STORAGE (AC-FT.)	RESERVOIR STAGE (FT.)	PERCENT REDUCTION OF DESIGN FLOOD
PMF Q_p = 12,025	11,273	2967	105.8	6%
½ PMF Q_p = 6018	5148	2537	103.7	14%

CONCLUSIONS

THE RESERVOIR STORAGE WILL REDUCE THE PMF DESIGN FLOW BY 6%. THE STORAGE WILL REDUCE THE ½ PMF FLOW BY 14%.

THE DAM OUTLETS CAN ONLY PASS 2158 CFS BEFORE THE DAM OVERTOPS. (18% OF THE PMF DESIGN FLOOD)

THE PMF DESIGN FLOOD WILL RESULT IN THE DAM BEING OVERTOPPED BY 3.4 FEET. THE ½ PMF DESIGN FLOOD WILL RESULT IN THE DAM BEING OVERTOPPED BY 1.3 FEET.

Job No. 81555 Sheet 12 of 30
Project Wiggs Pond Dam Date 10-22-80
Subject Hydraulics - Hydrology By JK Ch'k. by

The Design Flood (PMF) was routed through the structure, keeping the pond to be at Normal Pool Elevation of 98.5 ft (Initial Storage = 1367 ac-ft).

Job No. 90555 Sheet 13 of 30
Project Niles Pond Dam Date 12-21-80
Subject Hydraulics - Hydrology By SE Ch'k. by

Dam Failure Analysis

Assumptions - ① The hydraulic structure has a water level equal to 1024 feet or top of dam, just prior to dam failure.
② The discharge just prior to dam failure is equal to spillway capacity discharge that is 2158 cfs.
③ Breach Width (W_b) is equal to 40% of Effective Dam Length (407 ft.), W_b = 163 ft.
The failure at the Niles Pond Dam would probably occur in the left and right earth embankments.

Peak [illegible] at time of failure

$$Q_p = \frac{8}{27} W_b \sqrt{g} Y_o^{3/2}$$

W_b = [illegible]
g = [illegible]
Y_o = Total height from the level pool (top of dam) to the [illegible] toe of the dam, 92.6 feet

$$Q_p = \frac{8}{27}(163)\sqrt{32.2}\,(112.4-92)^{3/2}$$

$$Q_p = 9192 \text{ cfs}$$

Discharge from structure just prior to dam failure = 2158 cfs
Total discharge when dam fails = 9192 + 2158 = 11,350 cfs

Job No. 91[illegible] Sheet 14 of 30
Project [illegible] Date 10-21-91
Subject [illegible] By JK Ch'k. by

Dam Failure Analysis (cont'd)

Downstream of Dam, the "Rule of Thumb" Guidance for Estimating Downstream Dam Failure Hydrographs, and Stage -- Discharge curves developed by using Mannings equation, will be utilized to determine the effects on the flood wave as it moves downstream. Typical cross-sections taken off the U.S.G.S. map, scale 1:24,000, will be used in conjunction with Mannings equation to develop the Stage-Discharge curves.

Mannings Equation

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

n = composite n value
A = area
R = A/P
S = slope of reach

Reach #1

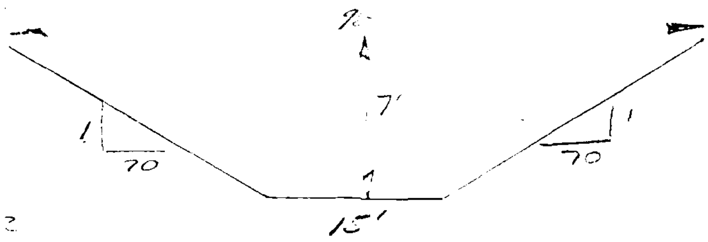
Length of reach = 3000'
Difference in Elevation = 1020 - 985
Slope = 0.012
Comp. n value = (sum of areas) = 0.08

DuBois & King, Inc. *ENGINEERING AND ENVIRONMENTAL SERVICES* RANDOLPH VERMONT 05060

Job No. [illegible] Sheet 15 of 30
Project [illegible] Date [illegible]
Subject [illegible] By [illegible] Ch'k. by

Low Flow Analysis (con't)

Reach #1



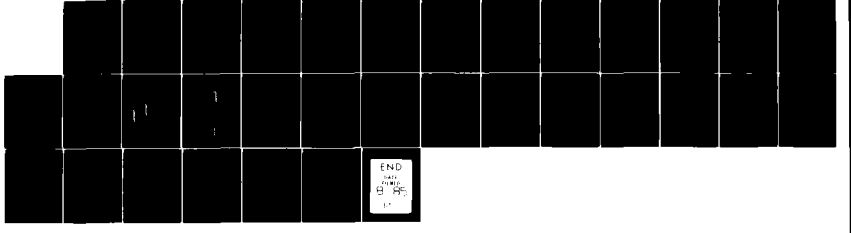
$A = bd + zd^2$

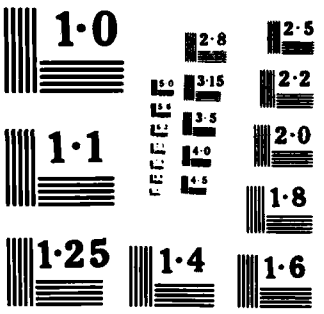
$P_w = b + 2d\sqrt{z^2+1}$

Depth	P_w	R	$R^{2/3}$	Area	z	Q
2	295.0	1.05	1.03	310	70	651
4	575.1	2.05	1.62	1180	70	2900
6	855.1	3.05	2.10	2610	70	11,183
7	995.1	3.55	2.33	3535	70	16,8[illegible]

AD-A158 281 NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS
MILES POND DAM (VT 00..(U) CORPS OF ENGINEERS WALTHAM
MA NEW ENGLAND DIV DEC 80

UNCLASSIFIED F/G 13/13 NL



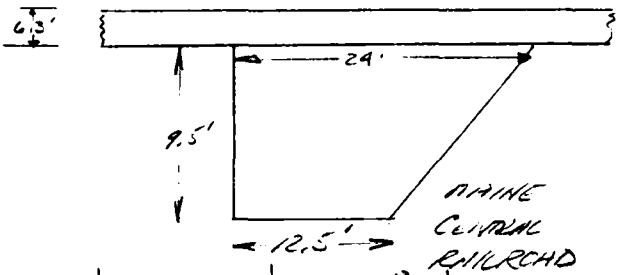

1·0
1·1
1·25
1·4
1·6
1·8
2·0
2·2
2·5
2·8
3·15
3·5
4·0
4·5

Job No. 90855 Sheet 17 of 30
Project [illegible] Dam Date 11-22-91
Subject Hydraulics - Hoosic By TK Ch'k. by

Dam Failure Analysis (cont'd)

Reach #2

Length = 550 ft
Slope = 0.025
Composite "n" = 0.055
$Q = \frac{1.49}{0.055} AR^{2/3} (.025)^{1/2}$
$Q = 5.07 AR^{2/3}$



Depth	P	$R^{2/3}$	Area	Q	Depth + $\frac{V^2}{2g}$
2	17.6	1.34	27.4	186	2.72
4	2[illegible]	1.90	59.7	575	5.44
6	27.[illegible]	2.39	96.8	1129	8.09
8	32	2.[illegible]	138.7	1828	10.69
9.4	36.7	2.79	170.9	2419	12.51

Pressure Flow: $Q = A\sqrt{2gH/K}$ $A = 173.4\ ft^2$ $K = 1.5$ (assumed)

Assume (Q), solve for (H)

Q	Area	H	Downstream Stage*	Bed Incline Upstream	EGL Upstream
500	173.4	0.19	2.2	0.7	3.1
800		0.50	2.7		3.9
1,000		0.78	2.98		4.5
1,500		1.74	3.55		6.0
2,000		3.10	4.05		7.9
2,500		4.84	4.45		10.0
3,000		6.97	4.80		12.5
3,500		9.49	6.13		15.3
4,000		12.39	5.42		18.5

* Stage downstream of bridge, calculated by Mannings Equation.

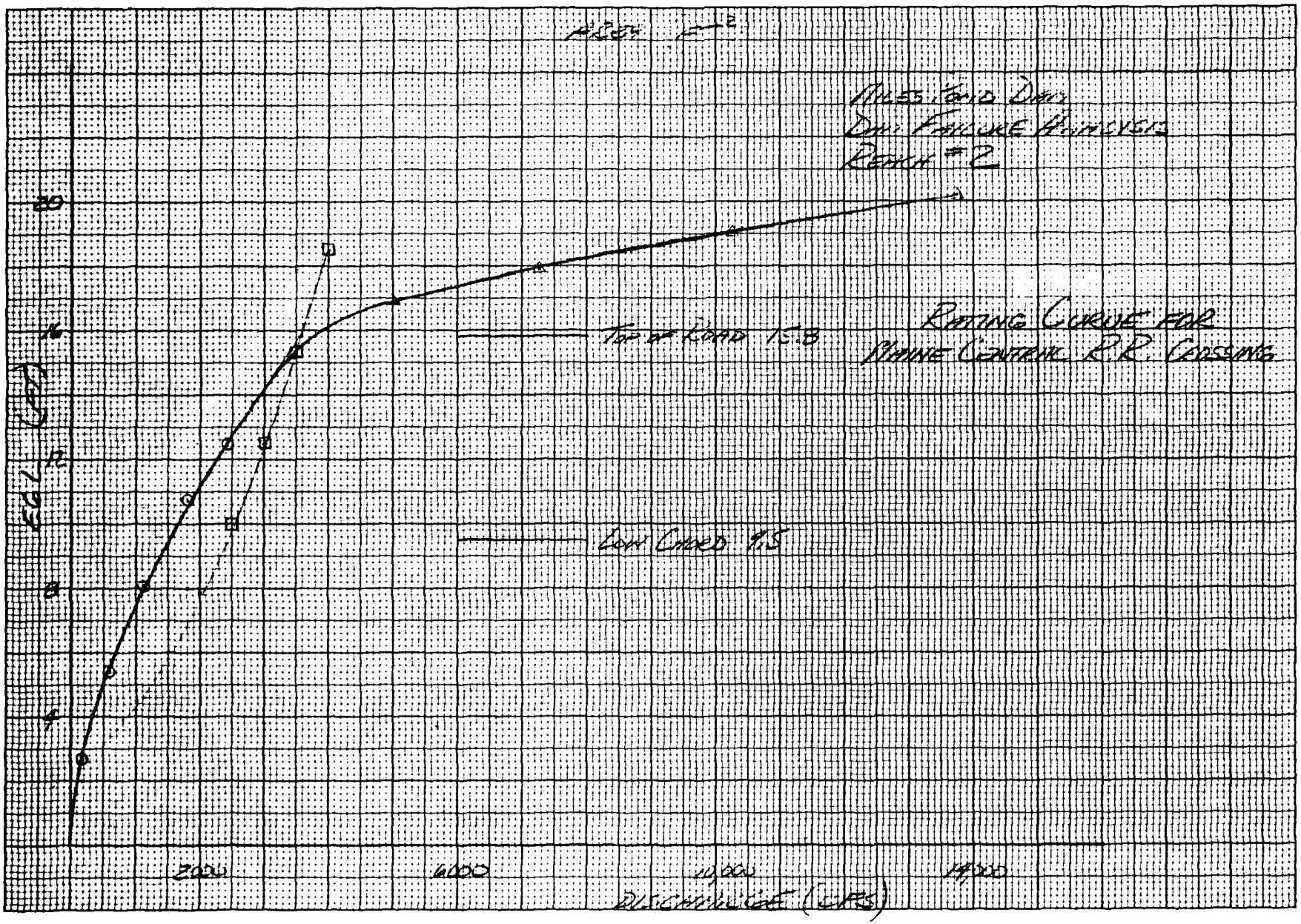
Job No. 90655 Sheet 18 of 30
Project Mill Pond Dam Date 10-23-90
Subject Hydraulics - Hydrology By CJK Ch'k. by

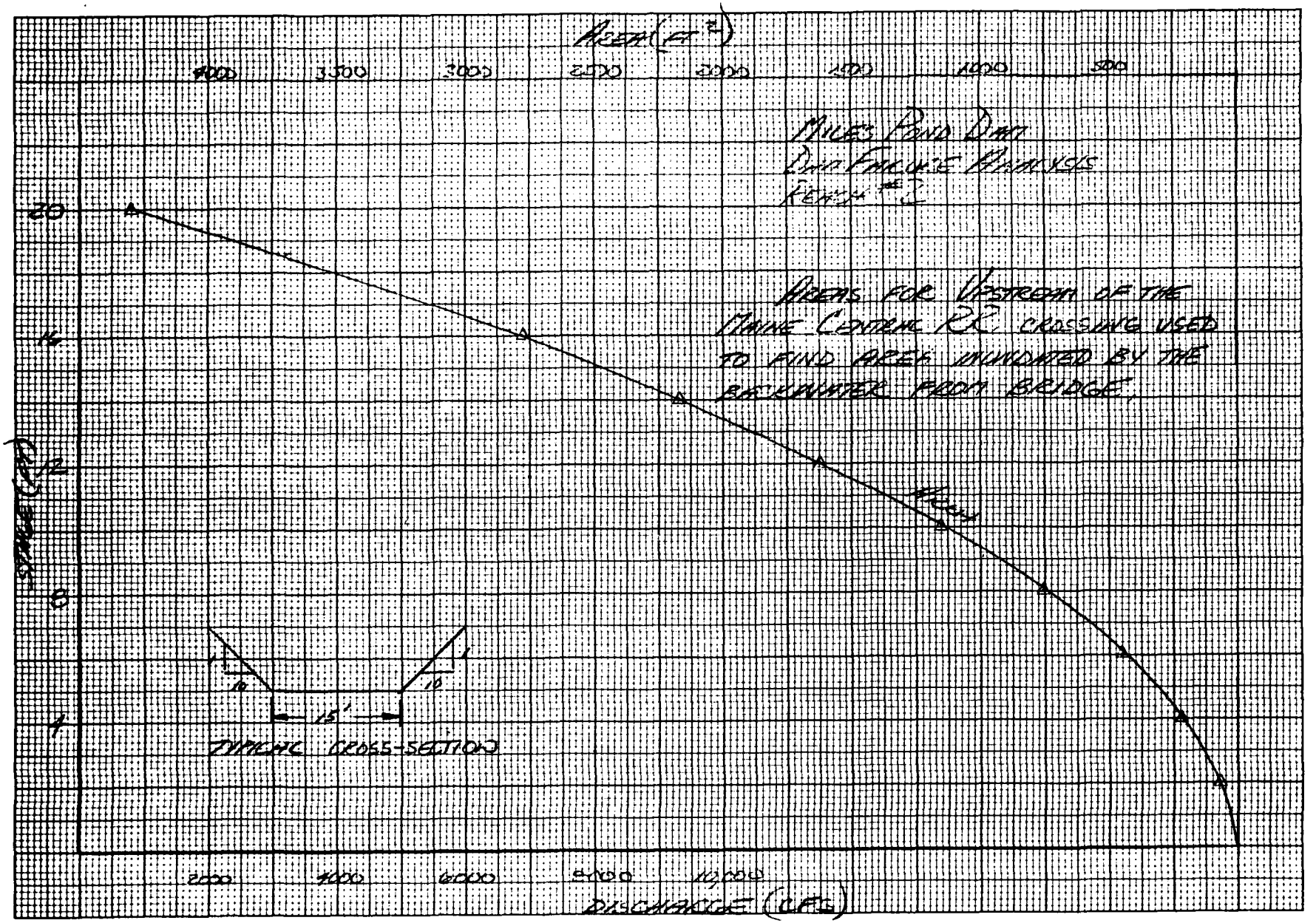
Dam Failure Analysis (con't)

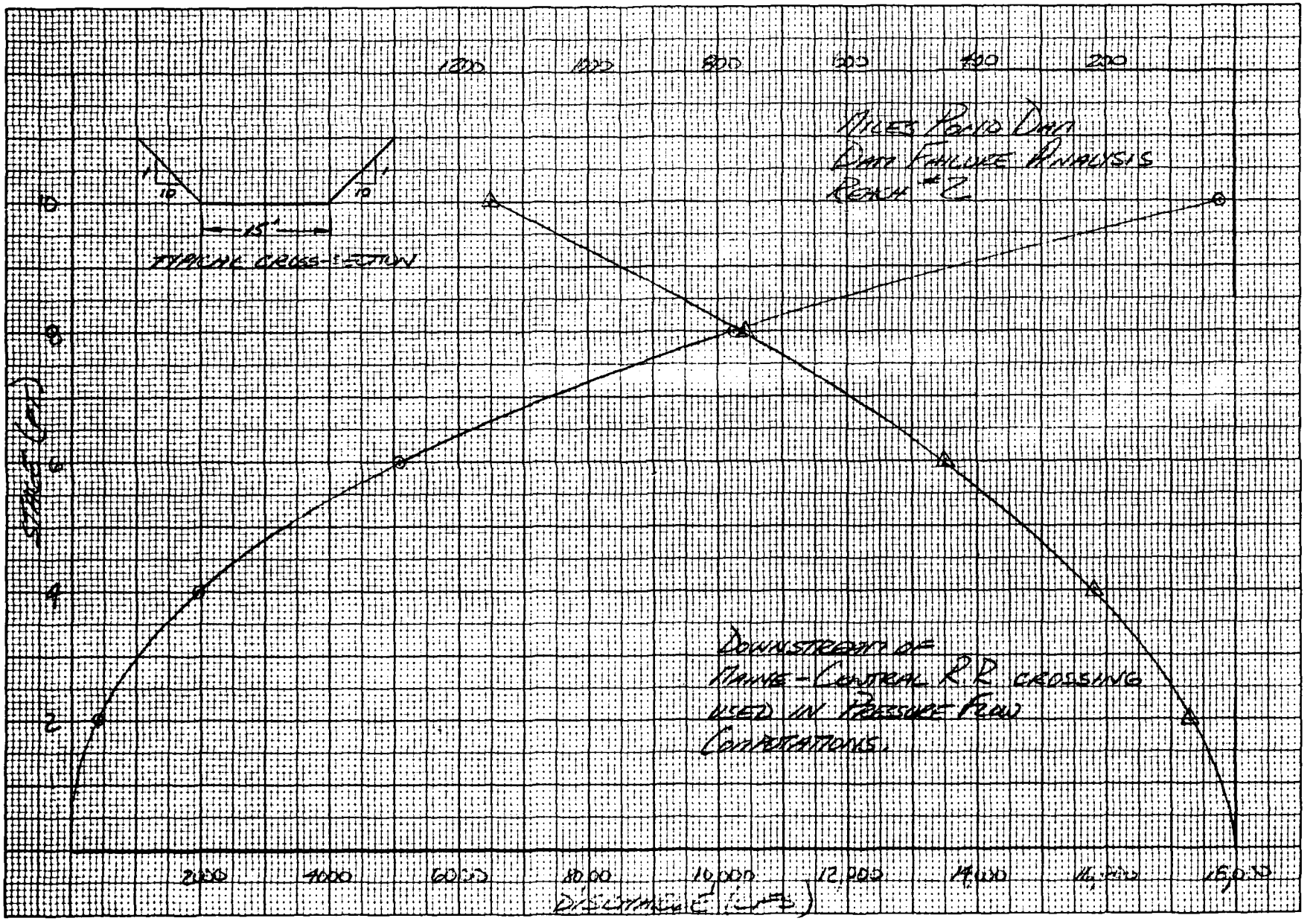
Weir Flow - $Q = CLH^{3/2}$ Reach #2

Assume $L = 500'$
$C = 2.5$

H	Stage	Q	$V^2/2g$ + Stage
1	16.8	1250	16.9
2	17.8	3536	17.9
3	18.8	6495	19.1
4	19.5	10,000	20.2



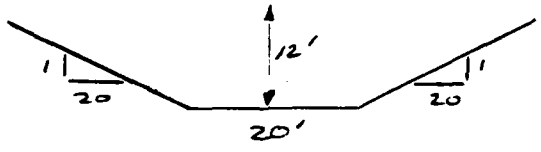



1200
1000
800
600
400
200
10
8
6
4
2
1
10
1
10
15'
TYPICAL CROSS-SECTION
Rues Road Dam
Dam Failure Analysis
Reach 2
DOWNSTREAM OF
RAILROAD-CONTROL RR CROSSING
USED IN PRESSURE FLOW
CALCULATIONS.
2000
4000
6000
8000
10,000
12,000
14,000
16,000
DISCHARGE (cfs)

Job No. 80ECC Sheet 22 of 30
Project Miles Pond Dam Date 10-22-80
Subject Hydraulics - Hydrology By SL Ch'k. by

Dam Failure Analysis (cont'd)

Reach #3



Reach Length = 6000 ft
Slope = 0.0036
Channel "n" = (Earthen Reach) = 0.08

$Q = \frac{1.49}{0.08} AR^{2/3} (0.0036)^{1/2}$

$Q = 1.12 AR^{2/3}$

Depth	A	$R^{2/3}$	Area	Q
2	100	1.13	120	160
4	152	1.70	400	801
6	260.2	2.18	840	2157
8	370.2	2.62	1440	4444
10	520.2	3.02	2200	7826
12	720.6	3.39	3120	12,459

Reach #4 - Maine Central Railroad Bridge

Assume same as Reach #2

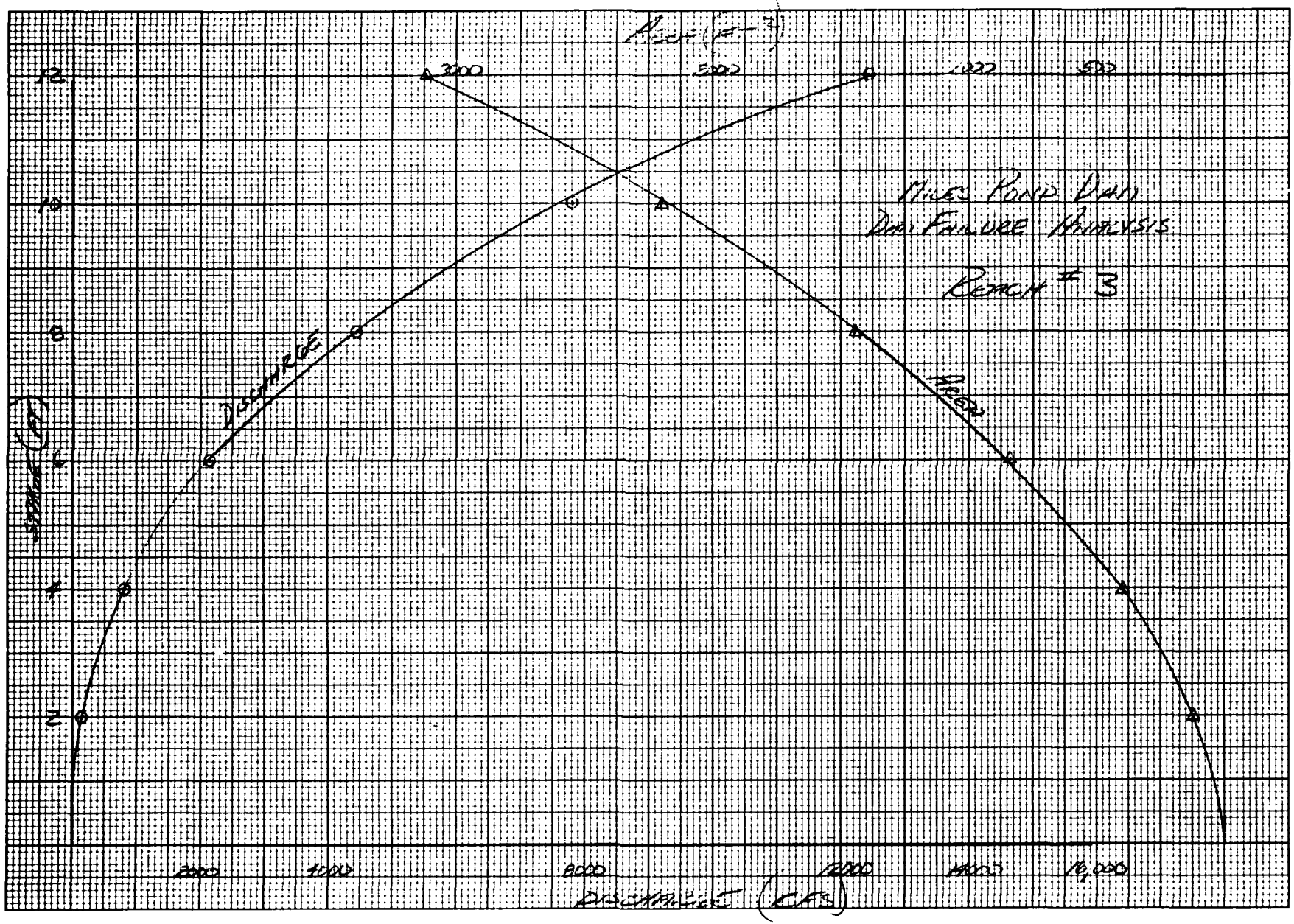
Reach Length = 1000'
Slope = 0.0091
Composite "n" = 0.055

$Q = \frac{1.49}{0.055} AR^{2/3} (0.0091)^{1/2}$

$Q = 2.58 AR^{2/3}$

Depth	
2	95
4	293
6	572
8	930
9.5	899

Pressure + Weir Flow assumed similar to Reach #2



River Point Dam
Dam Failure Analysis
Reach #3

Job No. 9E55 Sheet 24 of 30
Project Mill Pond Dam Date 11 24 80
Subject Hydraulic - Hydrology By CJK Ch'k. by

Reach #4

Backwater from Maine-Central R.R. Crossing. Information from Reach #2 was used to approximate the Stage-Discharge Curve for this area.

Job No. 9655 Sheet 25 of 30
Project Hale Reid Dam Date 10-23-80
Subject Hydraulics - Hydrology By CJK Ch'k. by

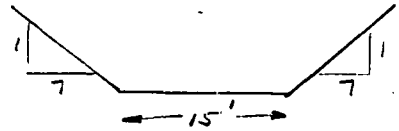
Dam Failure Analysis (con't)

Reach #5

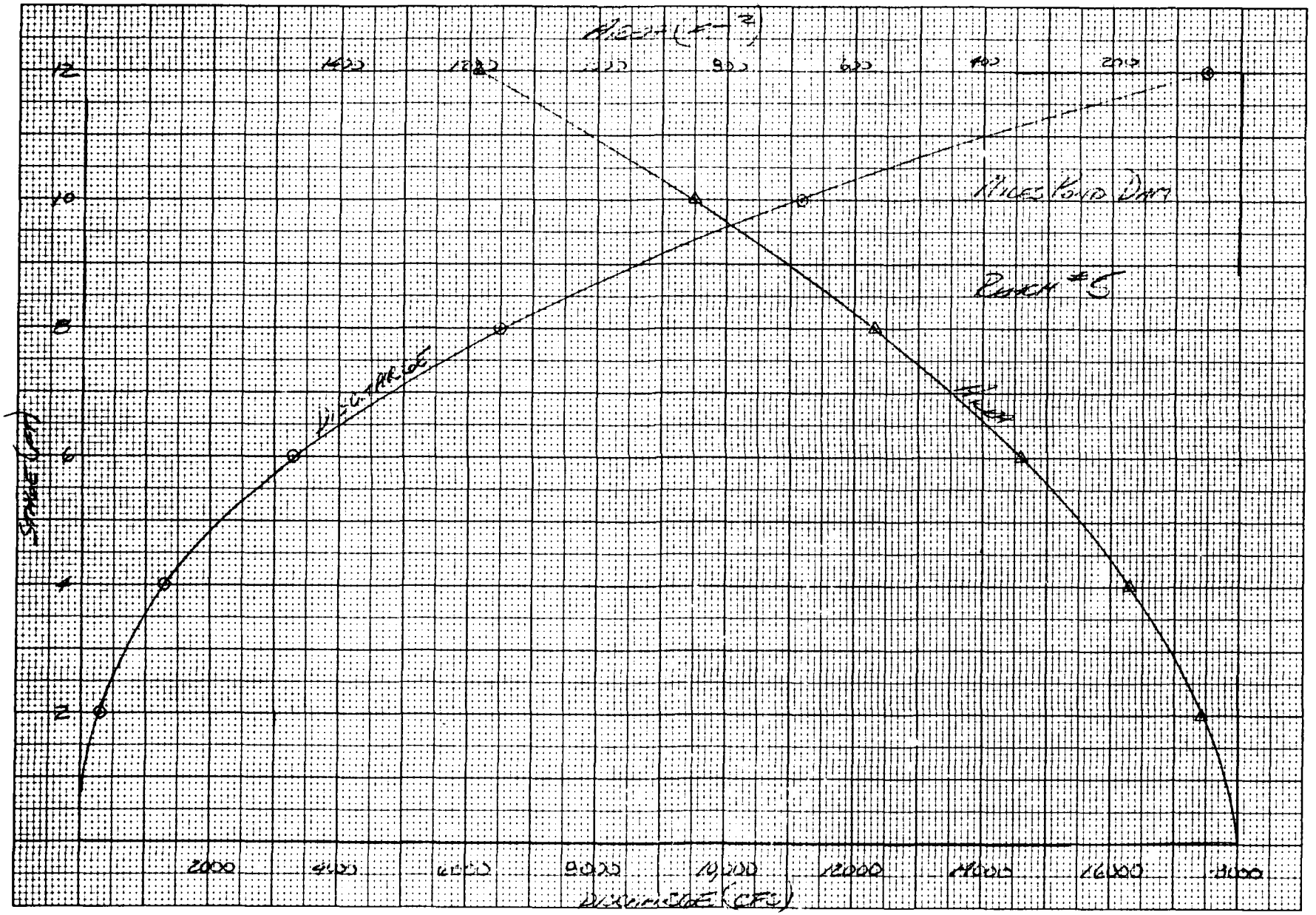
Reach Length = 3200'
Slope = 0.013
Composite "n" = 0.04

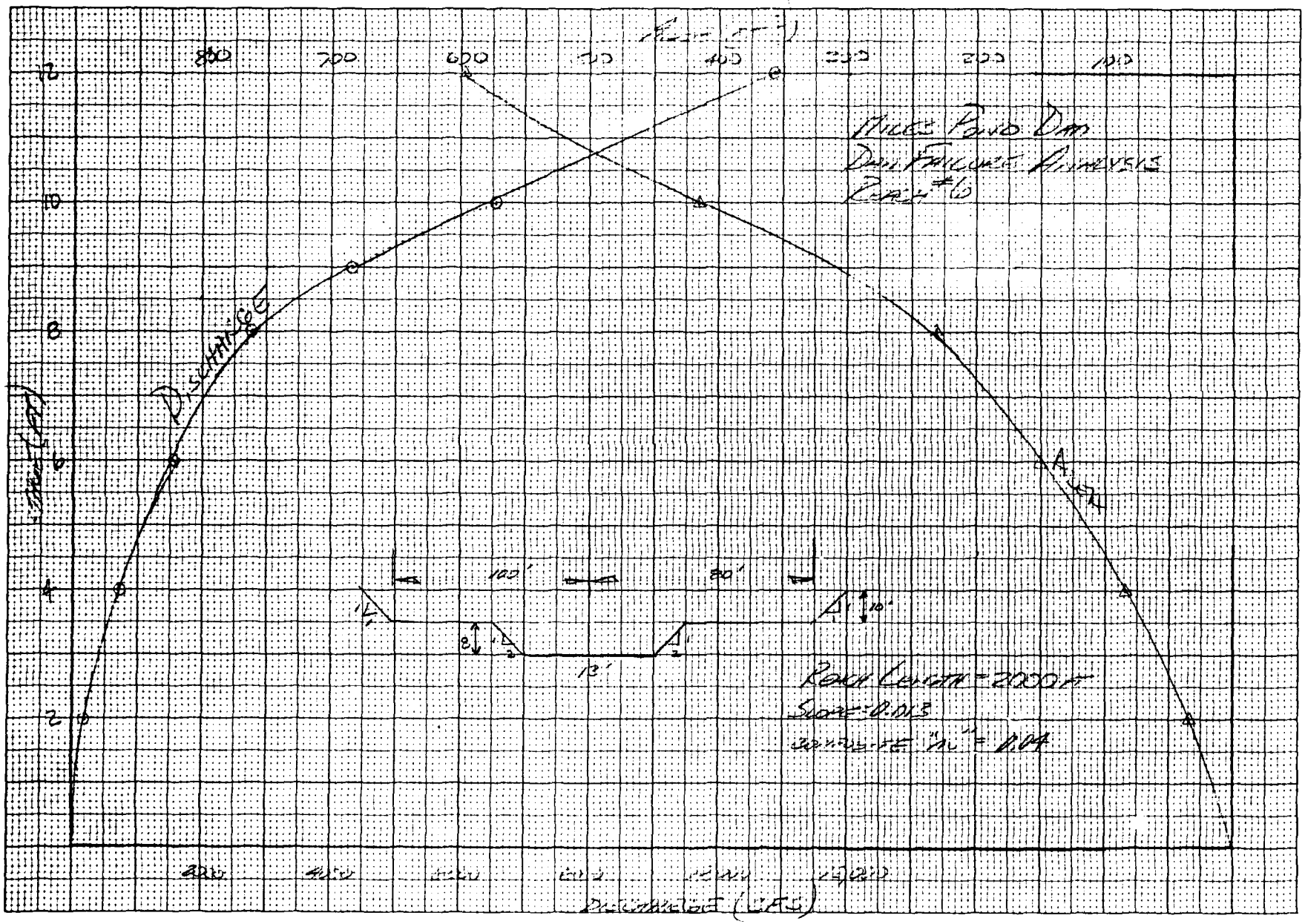
$$Q = \frac{1.49}{0.04} A R^{2/3} (0.013)^{1/2}$$

$$Q = 4.25 A R^{2/3}$$



Depth	P_w	$R^{2/3}$	Area	Q
2	42.3	1.22	58	301
4	71.6	1.79	172	1312
6	99.9	2.27	342	3299
8	128.1	2.69	565	6494
10	156.4	3.09	850	11,163
12	184.7	3.46	1188	17,470
13	198.8	3.64	1378	21,318


Rating Curve
Check #5
Discharge (cfs)



Job No. 87-55 Sheet 28 of 30
Project Ware Pond Dam Date 10-26-88
Subject HYDRAULICS - HYDROLOGY By CJK Ch'k. by

REACH #1

REACH LENGTH = 2000 FT

BREACH Q_{P1} = 11,350 CFS → STAGE = 6.1 FT.

W/STAGE AT 6.1 FT → AREA = 2600 FT² → VOLUME = .179 AC-FT

BREACH Q_{P2} (TRIAL) = $11350\left(1 - \frac{179}{2199}\right)$ = 10,426 CFS → STAGE = 5.85 FT

W/STAGE AT 5.85 FT → AREA = 2415 → VOLUME = 166 AC-FT

BREACH Q_{P2} = $11350\left(1 - \frac{179+166/2}{2199}\right)$ = 10460 CFS

STAGE IN REACH #1 = 5.85 FT.

REACH #2

REACH LENGTH = 550 FEET.

BREACH Q_{P2} = 10460 CFS → STAGE = 19.1 FT

W/STAGE AT 19.1 FT → AREA = 3938 FT² → VOLUME = 25 AC-FT

BREACH Q_{P3} (TRIAL) = $10460\left(1 - \frac{25}{2199}\right)$ = 10341 CFS → STAGE = 19.0 FT

W/STAGE AT 19.0 FT → AREA = 3900 FT² → VOLUME = 25 AC-FT

BREACH Q_{P3} = $10460\left(1 - \frac{25+25/2}{2199}\right)$ = 10341 CFS

STAGE IN REACH #2 = 19.0 FT

REACH #3

REACH LENGTH = 6000 FT

BREACH Q_{P3} = 10460 → STAGE = 11.3 FT

W/STAGE AT 11.3 FT → AREA = 2762 FT² → VOLUME = 380 AC-FT

BREACH Q_{P4} (TRIAL) = $10460\left(1 - \frac{380}{2199}\right)$ = 8652 CFS → STAGE = 10.5 FT

W/STAGE AT 10.5 FT → AREA = 2387 FT² → VOLUME = 329 AC-FT

BREACH Q_{P4} = $10460\left(1 - \frac{380+329/2}{2199}\right)$ = 8774 CFS

STAGE IN REACH #3 = 10.6 FT

Job No. 90-55 Sheet 29 of 30
Project Hale Falls Dam Date 10-26-90
Subject Hydraulics - Hydrology By CJK Ch'k. by

Reach #4

Reach Length = 525 ft

Q_{P4} = 8774 cfs → stage 18.5 ft

W/stage at 18.5 ft → Area = 3700 ft² → Volume = 22 ac-ft

Breach Q_{P5} (trial) = $8774\left(1 - \frac{22}{2199}\right)$ = 8686 cfs → stage = 18.5 ft

W/stage at 18.5 ft → 3700 ft² → 22 ac-ft

Breach Q_{P5} = $8774\left(1 - \frac{22+22/2}{2199}\right)$ = 8686 cfs

Stage in Reach #4 = 18.5 ft

Reach #5

Reach Length = 3200 ft

Breach Q_{P5} = 8686 cfs → stage 9 ft

W/stage at 9 ft → Area = 705 ft² → Volume = 52 ac-ft

Breach Q_{P6} (trial) = $8686\left(1 - \frac{52}{2199}\right)$ = 8481 cfs → stage 8.9 ft

W/stage at 8.9 ft → Area = 690 ft² → Volume 51 ac-ft

Breach Q_{P6} = $8686\left(1 - \frac{52+51/2}{2199}\right)$ = 8483 cfs

Stage in Reach #5 = 8.9 ft

Reach #6

Reach Length = 2000 ft

Breach Q_{P6} = 8483 → stage 10.9 ft

W/stage at 10.9 ft → Area = 510 ft² → Volume = 23 ac-ft

Breach Q_{P7} (trial) = $8483\left(1 - \frac{23}{2199}\right)$ = 8394 cfs → stage = 10.9 ft

W/stage a 10.9 ft → Area = 510 ft² → Volume = 22 ac-ft

Breach Q_{P8} = $8483\left(1 - \frac{23+23/2}{2199}\right)$ = 8394 cfs

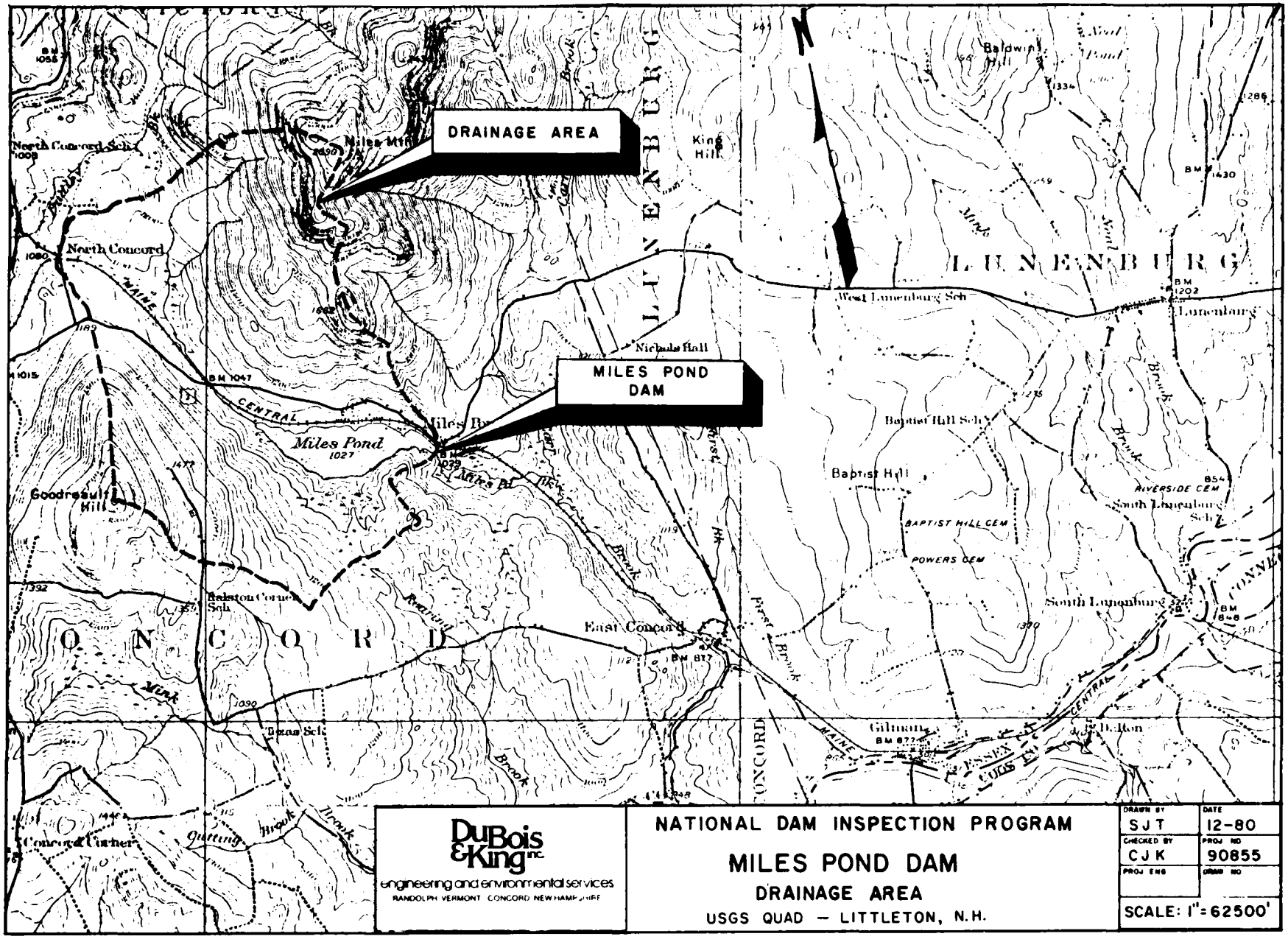
Stage in Reach #6 = 10.9 ft

Job No. 90E55 Sheet 30 of 30
Project Lilley Pond Dam Date 10-24-80
Subject Hydraulics - Hydrology By CJK Ch'k. by

Dam Failure Analysis (con't)

Conclusions

Reach	Discharge (cfs)	Stage (ft)	Comments	Stage Prior to Flood Wave (ft)
At Dam when failure occurs	11,350	10.4	Water level in pond is at 10.4, top of dam, prior to failure	
Reach #1 - between C to 3000 ft downstream of dam	10,460	5.9	No structures inundated	3.3
Reach #2	10,341	19	Backwater from R.R. Bridge. R.R. Bridge overtopped by 3 feet. R.R. used for freight, only	11.7
Reach #3	8774	10.6	No structures inundated	7.1
Reach #4	8686	18.5	Backwater from R.R. Bridge R.R. Bridge overtopped by ≈ 7ft R.R. used for freight, only	11.7
Reach #5	8483	8.9		5.0
Reach #6	8394	10.9	6 to 10 structures may be inundated Approx. (4) used for human habitation	7.2



DuBois & King inc.
engineering and environmental services
RANDOLPH VERMONT CONCORD NEW HAMPSHIRE

NATIONAL DAM INSPECTION PROGRAM

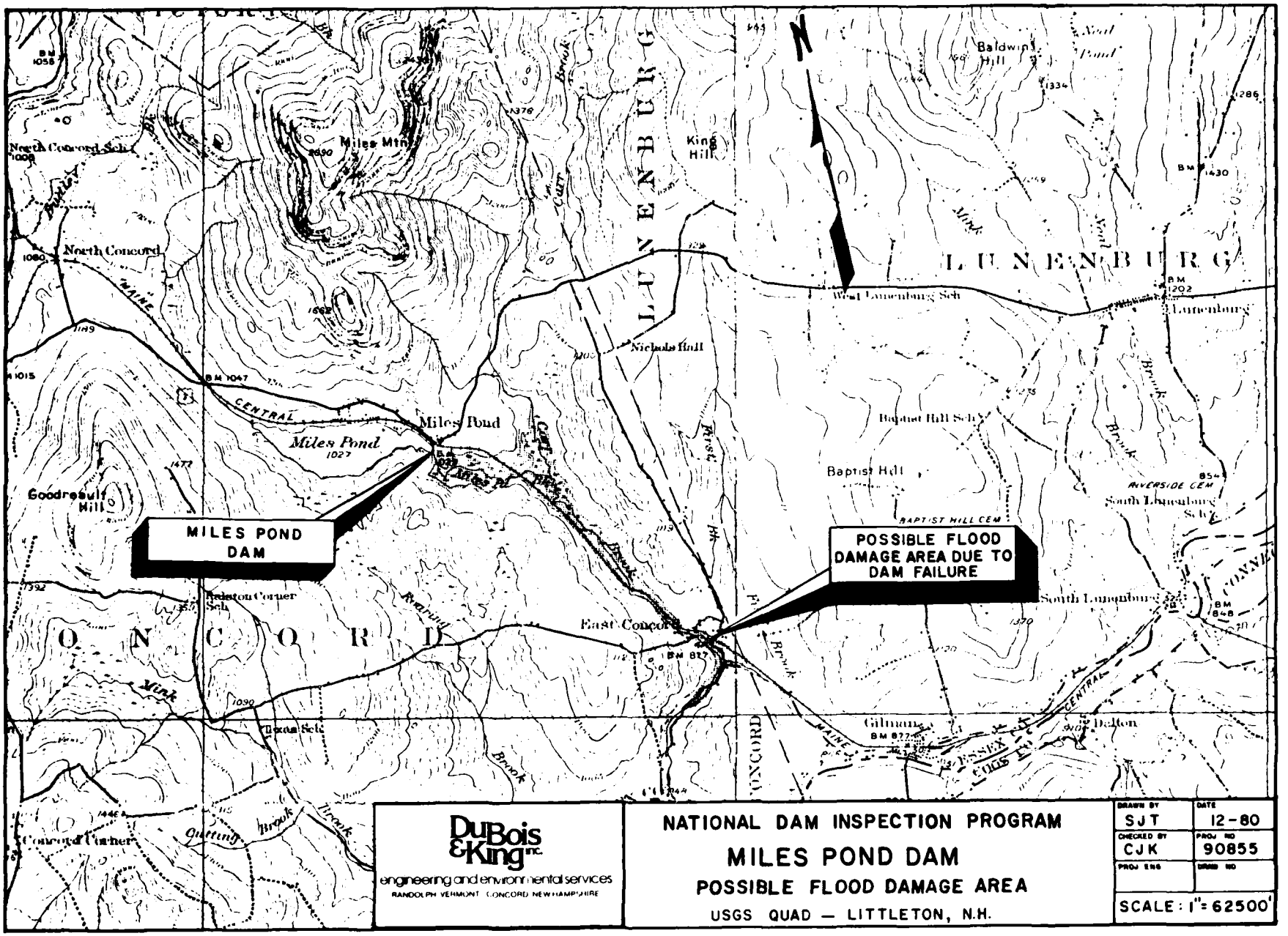
MILES POND DAM

DRAINAGE AREA

USGS QUAD – LITTLETON, N.H.

DRAWN BY	DATE
SJT	12-80
CHECKED BY	PROJ NO
CJK	90855
PROJ ENG	DRAW NO

SCALE: 1"=62500'



DuBois & King inc.
engineering and environmental services
RANDOLPH VERMONT CONCORD NEW HAMPSHIRE

NATIONAL DAM INSPECTION PROGRAM

MILES POND DAM

POSSIBLE FLOOD DAMAGE AREA

USGS QUAD — LITTLETON, N.H.

DRAWN BY	DATE
SJT	12-80
CHECKED BY	PROJ NO
CJK	90855
PROJ ENG	DRWG NO

SCALE: 1" = 62500'

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HEC-1 VERSION DATED JAN 1973
UPDATED ALG 74
CHANGE NO. 01
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MILES POND DAM U.S. ARMY CORPS OF ENGINEERS
CONCORD,VERMONT 1980
DESIGN STORM

JOB SPECIFICATION

NQ	NDR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
144	0	10	1	0	0	0	2	0	0

JOPER
3

NWT
0

********** ********** ********** ********** **********

SUB-AREA RUNOFF COMPUTATION

MILES POND DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME
1	0	0	0	1	0	1

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	5.70	0.00	0.00	1.00	0.000	0	0	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	19.50	100.00	111.00	120.00	0.00	0.00	0.00

LOSS DATA

STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0.00	0.00	1.00	0.00	0.00	1.00	.74	.12	0.00	0.00

UNIT HYDROGRAPH DATA
TP= 3.50 CP= .63 NTA= 0

RECESSION DATA
STRTQ= 4.00 QRCSN= -.10 RTIOR= 1.50

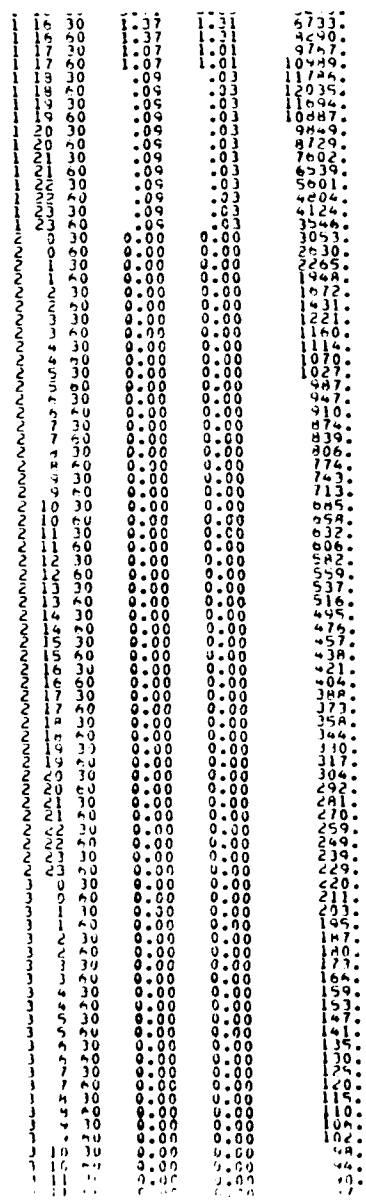
* APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 7.86 AND R= 6.22 INTERVALS

UNIT HYDROGRAPH 38 END-OF-PERIOD ORDINATES, LAG= 3.47 HOURS, CP= .64 VOL= 1.00

41.	152.	302.	470.	629.	744.	800.	786.	702.	594.
509.	433.	369.	314.	267.	227.	193.	165.	140.	119.
102.	86.	74.	63.	53.	45.	39.	33.	28.	24.
20.	17.	15.	13.	11.	9.	8.	7.		

END-OF-PERIOD FLOW

	TIME	RAIN	EXCS	COMP Q
1	0 30	.06	0.00	4.
1	0 60	.06	0.00	4.
1	1 30	.06	0.00	4.
1	1 60	.06	0.00	3.
1	2 30	.06	0.00	3.
1	2 60	.06	0.00	3.
1	3 30	.06	0.00	3.
1	3 60	.06	0.00	3.
1	4 30	.06	0.00	3.
1	4 60	.06	0.00	3.
1	5 30	.06	0.00	3.
1	5 60	.06	0.00	2.
1	6 30	.18	.09	6.
1	6 60	.18	.12	21.
1	7 30	.18	.12	53.
1	7 60	.18	.12	105.
1	8 30	.18	.12	176.
1	8 60	.18	.12	261.
1	9 30	.18	.12	354.
1	9 60	.18	.12	448.
1	10 30	.18	.12	533.
1	10 60	.18	.12	607.
1	11 30	.18	.12	670.
1	11 60	.18	.12	723.
1	12 30	.97	.91	801.
1	12 60	.97	.91	940.
1	13 30	1.17	1.11	1242.
1	13 60	1.17	1.11	1674.
1	14 30	1.44	1.40	2270.
1	14 60	1.44	1.40	3019.
1	15 30	1.71	1.65	3775.
1	15 60	1.71	1.65	4410.



3	12	30	0.00	0.00	83.
3	12	60	0.00	0.00	80.
3	13	30	0.00	0.00	77.
3	13	60	0.00	0.00	74.
3	14	30	0.00	0.00	71.
3	14	60	0.00	0.00	68.
3	15	30	0.00	0.00	65.
3	15	60	0.00	0.00	63.
3	16	30	0.00	0.00	60.
3	16	60	0.00	0.00	58.
3	17	30	0.00	0.00	55.
3	17	60	0.00	0.00	53.
3	18	30	0.00	0.00	51.
3	18	60	0.00	0.00	49.
3	19	30	0.00	0.00	47.
3	19	60	0.00	0.00	45.
3	20	30	0.00	0.00	43.
3	20	60	0.00	0.00	42.
3	21	30	0.00	0.00	40.
3	21	60	0.00	0.00	38.
3	22	30	0.00	0.00	37.
3	22	60	0.00	0.00	35.
3	23	30	0.00	0.00	34.
3	23	60	0.00	0.00	33.
		SUM	23.42	20.51	198783.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	12035.	9575.	3772.	1380.	198779.
INCHES		13.29	20.95	23.00	23.00
AC-FT		4750.	7486.	8218.	8218.

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

RESERVOIR ROUTING--MILES POND DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME
0	1	0	0	0	0	1

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME
0.0	0.000	0.00	1	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA
1	0	0	0.000	0.000	0.000	-1.

STORAGE=	1367.	1500.	1715.	1925.	2199.	2350.	2560.	2775.	2990.	3200.
OUTFLOW=	0.	11.	363.	988.	2158.	3109.	5403.	8284.	11636.	15392.

	TIME		EOP STOR	AVG IN	EOP OUT
1	0	30	1413.	4.	4.
1	0	60	1413.	4.	4.
1	1	30	1413.	4.	4.
1	1	60	1413.	3.	4.
1	2	30	1413.	3.	4.
1	2	60	1413.	3.	4.
1	3	30	1413.	3.	4.
1	3	60	1413.	3.	4.
1	4	30	1413.	3.	4.
1	4	60	1413.	3.	4.
1	5	30	1413.	3.	4.
1	5	60	1413.	3.	4.
1	6	30	1413.	4.	4.
1	6	60	1414.	14.	4.
1	7	30	1415.	37.	4.
1	7	60	1418.	79.	4.
1	8	30	1424.	140.	5.
1	8	60	1432.	218.	5.
1	9	30	1445.	308.	6.
1	9	60	1461.	401.	8.
1	10	30	1481.	491.	9.
1	10	60	1504.	570.	18.
1	11	30	1529.	638.	58.
1	11	60	1554.	696.	100.
1	12	30	1581.	762.	143.
1	12	60	1610.	881.	192.
1	13	30	1647.	1101.	251.
1	13	60	1695.	1458.	330.
1	14	30	1759.	1972.	495.
1	14	60	1843.	2644.	744.
1	15	30	1950.	3447.	1093.
1	15	60	[illegible]	4608.	1663.
1	16	30	[illegible]	[illegible]	2450.
1	16	60	[illegible]	[illegible]	[illegible]
1	17	30	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

18	30	2451.	11387.	9505.
18	60	2928.	11911.	10077.
19	30	2966.	11863.	11656.
19	60	2967.	11291.	11273.
20	30	2938.	10368.	10832.
20	60	2890.	9284.	10060.
21	30	2830.	8165.	9147.
21	60	2765.	7070.	8151.
22	30	2698.	6070.	7249.
22	60	2632.	5202.	6351.
23	30	2570.	4464.	5579.
23	60	2513.	3835.	4861.
0	30	2459.	3300.	4305.
0	60	2410.	2842.	3766.
1	30	2368.	2448.	3280.
1	60	2324.	2106.	2946.
2	30	2283.	1810.	2684.
2	60	2241.	1551.	2423.
3	30	2201.	1326.	2171.
3	60	2164.	1191.	2006.
4	30	2131.	1137.	1867.
4	60	2101.	1092.	1741.
5	30	2076.	1044.	1624.
5	60	2051.	1007.	1528.
6	30	2030.	967.	1437.
6	60	2011.	929.	1355.
7	30	1993.	892.	1280.
7	60	1977.	856.	1211.
8	30	1962.	822.	1148.
8	60	1949.	790.	1090.
9	30	1936.	758.	1036.
9	60	1925.	728.	987.
10	30	1913.	694.	953.
10	60	1902.	671.	921.
11	30	1892.	643.	889.
11	60	1881.	619.	857.
12	30	1871.	594.	827.
12	60	1861.	571.	797.
13	30	1851.	548.	768.
13	60	1842.	526.	740.
14	30	1833.	505.	713.
14	60	1824.	485.	687.
15	30	1815.	466.	661.
15	60	1807.	448.	636.
16	30	1799.	430.	612.
16	60	1791.	413.	588.
17	30	1784.	396.	567.
17	60	1776.	381.	545.
18	30	1769.	365.	525.
18	60	1763.	351.	504.
19	30	1756.	337.	485.
19	60	1750.	324.	466.
20	30	1744.	311.	448.
20	60	1738.	298.	431.
21	30	1732.	287.	414.
21	60	1727.	275.	398.
22	30	1722.	264.	383.
22	60	1717.	254.	368.
23	30	1712.	244.	357.
23	60	1707.	234.	344.
0	30	1702.	225.	341.
0	60	1697.	219.	331.
1	30	1692.	207.	325.
1	60	1687.	194.	317.
2	30	1682.	191.	308.
2	60	1677.	183.	300.
3	30	1672.	176.	292.
3	60	1667.	169.	284.
4	30	1662.	162.	274.
4	60	1657.	155.	266.
5	30	1652.	150.	259.
5	60	1648.	144.	253.
6	30	1643.	138.	245.
6	60	1639.	133.	239.
7	30	1634.	127.	231.
7	60	1630.	124.	224.
8	30	1626.	117.	217.
8	60	1621.	113.	210.
9	30	1617.	108.	203.
9	60	1613.	104.	197.
10	30	1610.	100.	192.
10	60	1606.	98.	184.
11	30	1602.	92.	178.
11	60	1598.	88.	172.
12	30	1595.	85.	167.
12	60	1591.	82.	161.

3	14	30	1582.	72.	145.
3	14	60	1579.	69.	140.
3	15	30	1576.	67.	135.
3	15	60	1573.	64.	131.
3	16	30	1570.	61.	126.
3	16	60	1568.	59.	122.
3	17	30	1565.	57.	118.
3	17	60	1563.	54.	113.
3	18	30	1560.	52.	109.
3	18	60	1558.	50.	106.
3	19	30	1555.	48.	102.
3	19	60	1553.	46.	98.
3	20	30	1551.	44.	95.
3	20	60	1549.	43.	91.
3	21	30	1547.	41.	88.
3	21	60	1545.	39.	85.
3	22	30	1543.	38.	82.
3	22	60	1541.	36.	79.
3	23	30	1540.	35.	76.
3	23	60	1538.	33.	73.
		SUM			195788.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	11273.	9019.	3664.	1360.	195788.
INCHES		12.52	20.35	22.65	22.65
AC-FT		4479.	7272.	8095.	8095.

RUNOFF SUMMARY, AVERAGE FLOW

		PEAK	6-HOUR	24-HOUR	72-HOUR	AREA
HYDROGRAPH AT	1	12035.	9575.	3772.	1380.	6.70
ROUTED TO	3	11273.	9019.	3664.	1360.	6.70

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HEC-1 VERSION DATED JAN 1973
UPDATED AUG 74
CHANGE NO. 01
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MILES POND DAM U.S. ARMY CORPS OF ENGINEERS
CONCORD,VERMONT 1980
DESIGN STORM

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
144	0	30	1	0	0	0	2	0	0

JOPER: 3 NWT: 0

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SUB-AREA RUNOFF COMPUTATION

MILES POND DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME
1	0	0	0	1	0	1

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	6.70	0.00	0.00	1.00	.500	0	0	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	19.50	100.00	111.00	120.00	0.00	0.00	0.00

LOSS DATA

STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0.00	0.00	1.00	0.00	0.00	1.00	.74	.12	0.00	0.00

UNIT HYDROGRAPH DATA
TP= 3.50 CP= .63 NTA= 0

RECESSION DATA
STRTQ= 4.00 QRCSN= -.10 RTIOR= 1.50

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 7.86 AND R= 6.22 INTERVALS

UNIT HYDROGRAPH 38 END-OF-PERIOD ORDINATES, LAG= 3.47 HOURS, CP= .64 VOL= 1.00

41.	152.	302.	470.	629.	744.	800.	786.	702.	598.
509.	433.	369.	314.	267.	227.	193.	165.	140.	119.
102.	86.	74.	63.	53.	45.	39.	33.	28.	24.
20.	17.	15.	13.	11.	9.	8.	7.		

END-OF-PERIOD FLOW

	TIME	RAIN	EXCS	COMP Q
1	0 30	.06	0.00	4.
1	0 60	.06	0.00	4.
1	1 30	.06	0.00	4.
1	1 60	.06	0.00	3.
1	2 30	.06	0.00	3.
1	2 60	.06	0.00	3.
1	3 30	.06	0.00	3.
1	3 60	.06	0.00	3.
1	4 30	.06	0.00	3.
1	4 60	.06	0.00	3.
1	5 30	.06	0.00	3.
1	5 60	.06	0.00	2.
1	6 30	.18	.06	9.
1	6 60	.18	.12	21.
1	7 30	.18	.12	33.
1	7 60	.18	.12	105.
1	8 30	.18	.12	174.
1	8 60	.18	.12	261.
1	9 30	.18	.12	354.
1	9 60	.18	.12	448.
1	10 30	.18	.12	533.
1	10 60	.18	.12	607.
1	11 30	.18	.12	670.
1	11 60	.18	.12	723.
1	12 30	.97	.91	801.
1	12 60	.97	.91	980.
1	13 30	1.17	1.11	1499.
1	13 60	1.17	1.11	1674.
1	14 30	1.44	1.40	2270.
1	14 60	1.44	1.40	3013.
1	15 30	1.71	1.67	3974.

1	16	30	1.37	1.31	6733.
1	16	60	1.37	1.31	8690.
1	17	30	1.07	1.01	9767.
1	17	60	1.07	1.01	10949.
1	18	30	.09	.03	11786.
1	18	60	.09	.03	12035.
1	19	30	.09	.03	11694.
1	19	60	.09	.03	10887.
1	20	30	.09	.03	9849.
1	20	60	.09	.03	8729.
1	21	30	.09	.03	7602.
1	21	60	.09	.03	6539.
1	22	30	.09	.03	5601.
1	22	60	.09	.03	4804.
1	23	30	.09	.03	4124.
1	23	60	.09	.03	3546.
2	0	30	0.00	0.00	3053.
2	0	60	0.00	0.00	2630.
2	1	30	0.00	0.00	2265.
2	1	60	0.00	0.00	1948.
2	2	30	0.00	0.00	1672.
2	2	60	0.00	0.00	1431.
2	3	30	0.00	0.00	1221.
2	3	60	0.00	0.00	1160.
2	4	30	0.00	0.00	1114.
2	4	60	0.00	0.00	1070.
2	5	30	0.00	0.00	1027.
2	5	60	0.00	0.00	987.
2	6	30	0.00	0.00	947.
2	6	60	0.00	0.00	910.
2	7	30	0.00	0.00	874.
2	7	60	0.00	0.00	839.
2	8	30	0.00	0.00	806.
2	8	60	0.00	0.00	774.
2	9	30	0.00	0.00	743.
2	9	60	0.00	0.00	713.
2	10	30	0.00	0.00	685.
2	10	60	0.00	0.00	658.
2	11	30	0.00	0.00	632.
2	11	60	0.00	0.00	606.
2	12	30	0.00	0.00	582.
2	12	60	0.00	0.00	559.
2	13	30	0.00	0.00	537.
2	13	60	0.00	0.00	516.
2	14	30	0.00	0.00	495.
2	14	60	0.00	0.00	476.
2	15	30	0.00	0.00	457.
2	15	60	0.00	0.00	438.
2	16	30	0.00	0.00	421.
2	16	60	0.00	0.00	404.
2	17	30	0.00	0.00	388.
2	17	60	0.00	0.00	373.
2	18	30	0.00	0.00	358.
2	18	60	0.00	0.00	344.
2	19	30	0.00	0.00	330.
2	19	60	0.00	0.00	317.
2	20	30	0.00	0.00	304.
2	20	60	0.00	0.00	292.
2	21	30	0.00	0.00	281.
2	21	60	0.00	0.00	270.
2	22	30	0.00	0.00	259.
2	22	60	0.00	0.00	249.
2	23	30	0.00	0.00	239.
2	23	60	0.00	0.00	229.
3	0	30	0.00	0.00	220.
3	0	60	0.00	0.00	211.
3	1	30	0.00	0.00	203.
3	1	60	0.00	0.00	195.
3	2	30	0.00	0.00	187.
3	2	60	0.00	0.00	180.
3	3	30	0.00	0.00	173.
3	3	60	0.00	0.00	166.
3	4	30	0.00	0.00	159.
3	4	60	0.00	0.00	153.
3	5	30	0.00	0.00	147.
3	5	60	0.00	0.00	141.
3	6	30	0.00	0.00	135.
3	6	60	0.00	0.00	130.
3	7	30	0.00	0.00	125.
3	7	60	0.00	0.00	120.
3	8	30	0.00	0.00	115.
3	8	60	0.00	0.00	110.
3	9	30	0.00	0.00	106.
3	9	60	0.00	0.00	102.
3	10	30	0.00	0.00	98.
3	10	60	0.00	0.00	94.
3	11	30	0.00	0.00	90.

3	12	30	0.00	0.00	43.
3	12	60	0.00	0.00	80.
3	13	30	0.00	0.00	77.
3	13	60	0.00	0.00	74.
3	14	30	0.00	0.00	71.
3	14	60	0.00	0.00	68.
3	15	30	0.00	0.00	65.
3	15	60	0.00	0.00	63.
3	16	30	0.00	0.00	60.
3	16	60	0.00	0.00	58.
3	17	30	0.00	0.00	55.
3	17	60	0.00	0.00	53.
3	18	30	0.00	0.00	51.
3	18	60	0.00	0.00	49.
3	19	30	0.00	0.00	47.
3	19	60	0.00	0.00	45.
3	20	30	0.00	0.00	43.
3	20	60	0.00	0.00	42.
3	21	30	0.00	0.00	40.
3	21	60	0.00	0.00	38.
3	22	30	0.00	0.00	37.
3	22	60	0.00	0.00	35.
3	23	30	0.00	0.00	34.
3	23	60	0.00	0.00	33.
		SUM	23.42	20.51	198783.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	12035.	9575.	3772.	1380.	198779.
INCHES		13.29	20.95	23.00	23.00
AC-FT		4750.	7486.	8218.	8218.

RUNOFF MULTIPLIED BY .50

2.	2.	2.	2.	2.	2.	1.	1.	1.	1.
1.	1.	3.	11.	27.	52.	88.	130.	177.	224.
267.	303.	335.	361.	401.	480.	621.	837.	1135.	1509.
1988.	2620.	3366.	4145.	4883.	5494.	5893.	6019.	5847.	5444.
4924.	4364.	3801.	3269.	2801.	2402.	2062.	1773.	1527.	1315.
1132.	974.	836.	715.	610.	580.	557.	535.	514.	493.
474.	455.	437.	419.	403.	387.	371.	357.	342.	329.
316.	303.	291.	280.	269.	258.	248.	238.	224.	219.
211.	202.	194.	186.	179.	172.	165.	159.	152.	146.
140.	135.	129.	124.	119.	115.	110.	106.	101.	97.
94.	90.	86.	83.	80.	76.	73.	70.	68.	65.
62.	60.	58.	55.	53.	51.	49.	47.	45.	43.
42.	40.	38.	37.	35.	34.	33.	31.	30.	29.
28.	27.	26.	25.	24.	23.	22.	21.	20.	19.
18.	17.	16.							

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	6018.	4787.	1886.	690.	99390.
INCHES		6.65	10.48	11.50	11.50
AC-FT		2379.	3743.	4109.	4109.

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HYDROGRAPH ROUTING

RESERVOIR ROUTING--MILES POND DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME
0	1	0	0	0	0	1

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME
0.0	0.000	0.00	1	0

NSTPS	NSTOL	LAG	AMSKK	X	TSK	STORA
1	0	0	0.000	0.000	0.000	-1.

STORAGE=	1367.	1500.	1715.	1925.	2199.	2350.	2560.	2775.	2990.	3200.
OUTFLOW=	0.	11.	363.	988.	2158.	3109.	5403.	8284.	11638.	15392.

		TIME		EOP STOR	AVG IN	EOP OUT
1	0	30		1390.	2.	2.
1	0	60		1390.	2.	2.
1	1	30		1390.	2.	2.
1	1	60		1390.	2.	2.
1	2	30		1390.	2.	2.
1	2	60		1390.	2.	2.
1	3	30		1390.	2.	2.
1	3	60		1390.	1.	2.
1	4	30		1390.	1.	2.
1	4	60		1390.	1.	2.
1	5	30		1390.	1.	2.
1	5	60		1390.	1.	2.
1	6	30		1390.	2.	2.

1	7	30	1391.	19.	25.
1	7	60	1393.	40.	25.
1	8	30	1395.	70.	25.
1	8	60	1400.	109.	30.
1	9	30	1406.	154.	34.
1	9	60	1414.	201.	44.
1	10	30	1424.	245.	55.
1	10	60	1436.	285.	67.
1	11	30	1449.	319.	78.
1	11	60	1463.	348.	88.
1	12	30	1478.	381.	99.
1	12	60	1494.	440.	116.
1	13	30	1518.	551.	140.
1	13	60	1545.	729.	185.
1	14	30	1581.	986.	144.
1	14	60	1628.	1322.	221.
1	15	30	1689.	1749.	321.
1	15	60	1767.	2304.	518.
1	16	30	1863.	2993.	805.
1	16	60	1977.	3756.	1210.
1	17	30	2102.	4514.	1746.
1	17	60	2232.	5189.	2366.
1	18	30	2353.	5694.	3146.
1	18	60	2448.	5955.	4180.
1	19	30	2507.	5932.	4826.
1	19	60	2535.	5645.	5128.
1	20	30	2537.	5184.	5148.
1	20	60	2520.	4644.	4963.
1	21	30	2490.	4083.	4639.
1	21	60	2453.	3535.	4232.
1	22	30	2412.	3039.	3791.
1	22	60	2372.	2601.	3353.
1	23	30	2333.	2232.	3003.
1	23	60	2294.	1918.	2753.
2	0	30	2253.	1650.	2499.
2	0	60	2214.	1421.	2257.
2	1	30	2175.	1224.	2057.
2	1	60	2137.	1053.	1894.
2	2	30	2100.	905.	1734.
2	2	60	2063.	776.	1578.
2	3	30	2028.	663.	1430.
2	3	60	1997.	595.	1295.
2	4	30	1969.	569.	1177.
2	4	60	1945.	546.	1075.
2	5	30	1924.	524.	986.
2	5	60	1906.	503.	930.
2	6	30	1888.	483.	878.
2	6	60	1872.	464.	830.
2	7	30	1857.	446.	786.
2	7	60	1843.	428.	744.
2	8	30	1830.	411.	706.
2	8	60	1818.	395.	670.
2	9	30	1807.	379.	636.
2	9	60	1796.	364.	605.
2	10	30	1786.	350.	575.
2	10	60	1777.	336.	547.
2	11	30	1768.	322.	521.
2	11	60	1760.	310.	497.
2	12	30	1752.	297.	474.
2	12	60	1745.	285.	452.
2	13	30	1738.	274.	431.
2	13	60	1731.	263.	412.
2	14	30	1725.	253.	393.
2	14	60	1719.	243.	376.
2	15	30	1714.	233.	361.
2	15	60	1708.	224.	352.
2	16	30	1703.	215.	343.
2	16	60	1697.	206.	334.
2	17	30	1692.	198.	325.
2	17	60	1686.	190.	316.
2	18	30	1681.	183.	308.
2	18	60	1676.	175.	299.
2	19	30	1671.	168.	290.
2	19	60	1666.	162.	282.
2	20	30	1660.	155.	274.
2	20	60	1655.	149.	266.
2	21	30	1651.	143.	258.
2	21	60	1646.	138.	250.
2	22	30	1641.	132.	242.
2	22	60	1636.	127.	234.
2	23	30	1632.	122.	227.
2	23	60	1628.	117.	220.
3	0	30	1623.	112.	213.
3	0	60	1619.	108.	206.
3	1	30	1615.	104.	199.
3	1	60	1611.	99.	193.
3	2	30	1607.	95.	187.

3	3	30	1600.	88.	174.	
3	3	60	1596.	85.	168.	
3	4	30	1593.	81.	163.	
3	4	60	1589.	78.	157.	
3	5	30	1586.	75.	152.	
3	5	60	1583.	72.	146.	
3	6	30	1580.	69.	141.	
3	6	60	1577.	66.	136.	
3	7	30	1574.	64.	132.	
3	7	60	1571.	61.	127.	
3	8	30	1568.	59.	123.	
3	8	60	1566.	56.	118.	
3	9	30	1563.	54.	114.	
3	9	60	1560.	52.	110.	
3	10	30	1558.	50.	106.	
3	10	60	1556.	48.	102.	
3	11	30	1554.	46.	99.	
3	11	60	1551.	44.	95.	
3	12	30	1549.	42.	92.	
3	12	60	1547.	41.	88.	
3	13	30	1545.	39.	85.	
3	13	60	1543.	38.	82.	
3	14	30	1542.	36.	79.	
3	14	60	1540.	35.	76.	
3	15	30	1538.	33.	73.	
3	15	60	1536.	32.	71.	
3	16	30	1535.	31.	68.	
3	16	60	1533.	29.	65.	
3	17	30	1532.	28.	63.	
3	17	60	1530.	27.	61.	
3	18	30	1529.	26.	58.	
3	18	60	1528.	25.	56.	
3	19	30	1526.	24.	54.	
3	19	60	1525.	23.	52.	
3	20	30	1524.	22.	50.	
3	20	60	1523.	21.	48.	
3	21	30	1522.	20.	46.	
3	21	60	1521.	20.	45.	
3	22	30	1520.	19.	43.	
3	22	60	1519.	18.	41.	
3	23	30	1518.	17.	40.	
3	23	60	1517.	17.	38.	
		SUM			96341.	

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5148.	4097.	1783.	669.	96341.
INCHES		5.69	9.90	11.15	11.15
AC-FT		2033.	3539.	3983.	3983.

RUNOFF SUMMARY, AVERAGE FLOW

		PEAK	6-HOUR	24-HOUR	72-HOUR	AREA
HYDROGRAPH AT	1	6018.	4787.	1886.	690.	6.70
ROUTED TO	0	5148.	4097.	1783.	669.	6.70

APPENDIX E
INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

PART I – INVENTORY OF DAMS IN THE UNITED STATES

(PURSUANT TO PUBLIC LAW 92–367)

See reverse side for instructions.

FORM APPROVED
OMB NO. 49–R0421

REQUIREMENTS CONTROL SYMBOL
DAEN–CWE–17

[1] STATE: VT | IDENTITY NUMBER: 00042

IDENTIFICATION

[2] DIVISION	[3] STATE	[4] COUNTY	[5] CONGR DIST	[6] STATE	[7] COUNTY	[8] CONGR DIST	[9] NAME	[10] LATITUDE (North) ° ′	[11] LONGITUDE (West) ° ′	[12] REPORT DATE DAY MO YR
	VT	011					MILES POND DAM	44 26.7	72 47.7	31 DEC 80

IDENTIFICATION (Continued)

[13] POPULAR NAME	[14] NAME OF IMPOUNDMENT

LOCATION

[15] REGION	[16] BASIN	[17] RIVER OR STREAM	[18] NEAREST DOWNSTREAM CITY – TOWN – VILLAGE	[19] DIST. FROM DAM (mi)	[20] POPULATION
01	C	MILES POND BROOK	EAST COVENTRY	3	90

STATISTICS

[21] TYPE OF DAM	[22] YEAR COMPLETED	[23] PURPOSES	[24] STRUCTURAL HEIGHT (ft)	[25] HYDRAULIC HEIGHT (ft)	[26] IMPOUNDING CAPACITIES MAXIMUM (acre – ft)	[27] IMPOUNDING CAPACITIES NORMAL (acre – ft)	[27A] CORPS ENGR. DIST.	[27B] OWN.	[27C] FED. R.	[27D] PRV/FED	[27E] SCS A.	[27F] VERIFICATION DATE DA MO YR	BLANK
ER	1969	R	19	10	600	130	NAE	N	N	N	N	31 DEC 80	3

[28]

REMARKS

REMARKS	4

GENERAL INSTRUCTIONS

This form is for use in preparing the inventory of dams in the United States under the requirements of the National Program for the Inspection of Dams, P.L. 92-367. All items of Part I and Part II (Lines 0-9) must be completed as instructed below. Print entries distinctly in ink or pencil. For letters o, z, and i, write Ø, Z, and I.

Write only one letter or numeral in each space; do not use more letters than blocks allowed for an item. Do not abbreviate on Part I. Leave one space between words and no space between code letters.

For all letter codes or word entries place first letters in left block of field. In word fields any alphabetic, numeric or special character may be entered. For all numerical entries, use only numerals placing the last digit of number in the right block of field, including trailing zeros. Do not include a decimal point! In fields where decimals are required values are to be placed around the decimal point printed on the form.

Leave blank those spaces where item does not apply, e.g., do not write "N/A", "-", "None", etc., unless instructed to do so by specific instructions. Use the remarks line when additional space is needed for an item, or to clarify an entry. Preface each remark with the item number. (See Item [28] or [56] instructions)

PART I

Item [1] IDENTITY: The Division Engineer will assign and control the identity for dams in the states for which he is responsible. The first two characters of the identity will be the two-letter state abbreviation in accordance with Federal Information Processing Standards Publication, June 15, 1970 (FIPS PUB 6-1). In cases where a dam is physically located in two or more states, one state will be designated as the principal state for the identity. The last five (5) characters of the identity will be a sequential number assigned to identify dams within a state.

LINE 0

Item [2] DIVISION: Enter the three (3) letter office symbol for the division making the report in accordance with ABBR Report Code, Appendix B, ER 18-2-1, Civil Works Information System, e.g., NAD, ORD, SWD, etc.

Location:

Item [3] STATE: Enter two (2) letter principal state abbreviation in accordance with FIPS PUB 6-1.
Item [4] COUNTY: Enter three (3) digit county identification in accordance with FIPS PUB 6-1.
Item [5] CONG DIST: Enter one (1) or two (2) digit number for congressional districts in which dam is located.
Item [6], [7], and [8] (Use second location for structures situated in more than one state.)

Item [9] DAM NAME: Enter official name of dam. Do not abbreviate unless the abbreviation is a part of the official name. For dams that do not have a name, create a name by combining the two (2) letter state abbreviation plus "NO NAME" plus a sequential number. Example: if two dams in the State of Alabama do not have names, they would be named as ALNONAME1 and ALNONAME2.
Item [10] & [11] LATITUDE AND LONGITUDE: Enter the latitude and longitude in degrees, minutes and tenths of a minute. All geographical location items pertain to dam as its maximum section.
Item [12] REPORT DATE: Enter the one (1) or two (2) digits for day, the first three (3) letters of the month and a two (2) digit year (e.g., 12 JAN74) in which the data has been revised, updated or otherwise changed.

LINE 1:

Item [13] POPULAR NAME OF DAM: If (other than the official name of the dam) in common use, enter the name in this space. Leave blank if not applicable.
Item [14] NAME OF IMPOUNDMENT: Enter official name of lake or reservoir. Leave blank if reservoir does not have a name.

Item [15] & [16] REGION AND BASIN: Enter two (2) digit numbers for Region and Basin in accordance with Appendix C, ER 18-2-1, Civil Works Information System.
Item [17] RIVER OR STREAM: Enter official name of river or stream on which the dam is built. If stream is without name, indicate as tributary to river named, e.g., TR-COLORADO. If off stream, enter name of river plus "OFFSTREAM".
Item [18] NEAREST DOWNSTREAM CITY-TOWN-VILLAGE: Enter the nearest downstream city-town-village of such size which can be located on a general map.
Item [19] DISTANCE FROM DAM: Enter distance from dam to nearest downstream city-town-village to the nearest mile.
Item [20] POPULATION: Enter population of city-town-village given in Item [18].

LINE 3

Item [21] TYPE OF DAM: Enter two (2) letter codes, in any order, to describe type of dam.

EARTH	RE	BUTTRESS	CB	OTHER	OT
ROCKFILL	ER	ARCH	VA	(Describe "other" in remarks)	
GRAVITY	PG	MULTI-ARCH	MV		

Item [22] YEAR COMPLETED: Enter year when the main dam structure was completed and ready for use. If only approximate year can be determined, note this in remarks.
Item [23] PURPOSES: Enter one (1) letter codes that describe the purposes for which the reservoir is used. The order entered should indicate the relative decreasing importance of the project purposes.

IRRIGATION	- I	WATER SUPPLY	- S	DEBRIS CONTROL	- D
HYDROELECTRIC	- *H*	*RECREATION*	- R	*OTHER*	- *O*
FLOOD CONTROL	- C	STOCK OR SMALL		(Describe "other" in remarks)	
NAVIGATION	- N	FARM POND	- P		

Item [24] STRUCTURAL HEIGHT: Enter, to the nearest foot, the structural height of the dam which is defined as; the overall vertical distance from the lowest point of foundation surface to the top of the dam.
Item [25] HYDRAULIC HEIGHT: Enter, to the nearest foot, the hydraulic height of the dam which is defined as; the effective height of the dam with respect to the maximum storage capacity, measured from the natural bed of the stream or watercourse at the downstream toe of the barrier, or if it is not across a stream or watercourse, the height from the lowest elevation of the outside limit of the barrier to the maximum storage elevation.

Impounding Capabilities:

Item [26] MAXIMUM: Enter the acre feet for maximum storage which is defined as; the total storage space in a reservoir below the maximum attainable water surface elevation, including any surcharge storage.
Item [27] NORMAL: Enter the acre feet for normal storage which is defined as; the total storage space in a reservoir below the normal retention level, including dead and inactive storage and excluding any flood control or surcharge storage.

Item [27A]: CORPS OF ENGINEERS DISTRICT: Enter the three character Corps of Engineers ABBR report code in which the dam is geographically located, in accordance with Appendix B, ER 19-2-1, Civil Works Information System, e.g., NAN, ORH, SWF, etc.
Item [27B] OWNERSHIP: Enter N, for Non-Federal; G, for Federal Gov't. Agencies other than the Corps of Engineers; C for Corps of Engineers.
Item [27C] FEDERALLY REGULATED: Enter N for No; Enter Y for Yes.
Item [27D] PRIVATE DAMS ON FEDERAL LAND: Enter N for No; Enter Y for Yes.
Item [27E] ASSISTANCE BY SOIL CONSERVATION SERVICE: Enter N for None; T for Technical Assistance; F for Financial Assistance, B for Both Technical and Financial Assistance.
Item [27F] VERIFICATION: Date the data was verified as being complete and correct. Enter date as described in Item [12].

LINE 4

Item [28] REMARKS: Preface remarks with the item number to which it pertains, e.g., 22ORIGINALLY CONSTRUCTED IN 1928, 23 SETTLING BASIN. Only one remark line should be used for PART I remarks.

[1]

PART II – INVENTORY OF DAMS IN THE UNITED STATES

(PURSUANT TO PUBLIC LAW 92-367)

See reverse side for instructions.

FORM APPROVED
OMB NO. 49-R0421

REQUIREMENTS CONTROL SYMBOL
DAEN-CWE-17

STATE	IDENTITY NUMBER				
1 2	3	4	5	6	7
VT	C	C	C	6	2

STATISTICS

[29] D SHAZ	[30] CREST LENGTH (ft)	[31] SPILLWAY TYPE	[32] SPILLWAY WIDTH (ft)	[33] SPILLWAY MAXIMUM DISCHARGE (cfs)	[34] VOLUME OF DAM (CY)	[35] POWER CAPACITY INSTALLED (MW)	[36] POWER CAPACITY PROPOSED (MW)	[37] NAV LOCKS NO.	[38] LENGTH (ft)	[39] WIDTH (ft)	[40] LENGTH (ft)	[41] WIDTH (ft)	[42] LENGTH (ft)	[43] WIDTH (ft)	[44] LENGTH (ft)	[45] WIDTH (ft)	BLANK
1	130	U	16.	2160													5

MISC DATA

[46] OWNER	[47] ENGINEERING BY	[48] CONSTRUCTION BY
U.S. FOREST SERVICE OF WATER RES.	DUBOIS AND KING INC	LAHERLE CONSTRUCTION CO	6

MISC DATA (Continued)

[49] REGULATORY AGENCY: DESIGN	CONSTRUCTION	OPERATION	MAINTENANCE
			7

MISC. DATA (Continued)

[53] INSPECTION BY	[54] INSPECTION DATE DAY	MO	YR	[55] AUTHORITY FOR INSPECTION
DUBOIS AND KING INC	30	SEP	71	PL 92-367	8

REMARKS

[56] REMARKS

9

PART II:

Item 1 IDENTITY: Enter Identity per GENERAL INSTRUCTIONS on PART I.

LINE 5:

Item [29] D/S HAZ: Enter the digit that most closely represents the hazard potential that could occur to the downstream (D/S) area resulting from failure or mis-operation of the dam or facilities.

HAZARD POTENTIAL

CATEGORY	LOSS OF LIFE (Extent of Development)	ECONOMIC LOSS (Extent of Development)
3 = Low	None expected (No permanent structures for human habitation)	Minimal (Undeveloped to occasional structures or agriculture)
2 = Significant	Few (No urban developments and no more than a small number of inhabitable structures)	Appreciable (Notable agriculture, industry or structures)
1 = High	More than few	Excessive (Extensive community, industry or agriculture)

Item [30] CREST LENGTH: Enter, to the nearest foot, the crest length of the dam which is defined as; the total horizontal distance measured along the axis at the elevation of the top of dam between abutments or ends of dam. Note that this includes spillway width, powerhouse sections, and navigation locks where they form a continuous part of the dam water retaining structure. Detached spillways, locks, and powerhouses shall not be included.

Spillway:

Item [31] TYPE: Enter the one letter code that applies.

CONTROLLED = C UNCONTROLLED = U NONE = N

Item [32] WIDTH: Enter to the nearest foot, the width of the spillway available for discharge when the reservoir is at its maximum designed water surface elevation.
Item [33] MAXIMUM DISCHARGE: Enter the number of cubic feet per second which the spillway is capable of discharging when the reservoir is at its maximum designed water surface elevation.

Volume of Dam:

Item [34] VOLUME OF DAM: Enter the total number of cubic yards occupied by the materials used in the dam structure. If volume of separate materials is known, enter in remarks. Include portions of powerhouses, locks and spillways only if integral with the dam and required for structural stability.

Power Capacity:

Item [35] INSTALLED: Enter installed capacity to one tenth (1/10) Megawatt as of the report date.
Item [36] PROPOSED: Enter the future additional capacity proposed to one tenth (1/10) Megawatt.

Navigation Locks:

Item [37] NUMBER: Enter the number of existing navigation locks for the project.

Item [38] LENGTH: Enter to the nearest foot the length of the navigation lock.

Item [39] WIDTH: Enter to the nearest foot the width of the navigation lock.

Item [40] thru [45] Enter the lengths and widths of additional locks.

LINE 6:

Item [46] OWNER: Enter name of owner. Abbreviate as necessary.
Item [47] ENGINEERING BY: Enter name of organization that engineered the main dam structure. Abbreviate as required.
Item [48] CONSTRUCTION BY: Enter name of construction agency responsible for construction of main structure. Abbreviate as required.

LINE 7:

Regulatory Agency:

Item [49] DESIGN: Enter the name of the organization other than the owner having regulatory or approval authority over the design of the dam. If no organization other than the owner has regulatory or approval authority over the design of the dam indicate NONE.
Item [50] CONSTRUCTION: Enter the name of the organization other than the owner having regulatory authority or inspection responsibilities over the construction of the dam. If no organization other than the owner has regulatory authority or inspection responsibilities over the construction of the dam indicate NONE.
Item [51] OPERATION: Enter the name of the organization other than the owner having regulatory authority, operational control, or surveillance responsibilities over the operation of the dam. If no organization other than the owner has regulatory authority, operational control or surveillance responsibilities over the operation of the dam indicate NONE.
Item [52] MAINTENANCE: Enter the name of the organization other than the owner having regulatory authority or inspection or surveillance responsibilities over the maintenance of the dam. If no organization other than the owner has regulatory authority or inspection or surveillance responsibilities over the maintenance of the dam indicate NONE.

LINE 8:

Inspection:

Item [53] BY: Enter the name of the organization that performed the last safety inspection. Abbreviate as required. If no inspection has been performed enter NONE.
Item [54] DATE: Enter the one (1) or two (2) digits for day, the first three (3) letters of the month and a two (2) digit year when the inspection was performed. If not applicable, leave blank.
Item [55] AUTHORITY FOR INSPECTION: Enter the legislative or regulatory authority for performing the inspection indicated in item 53, e.g., P.L. 92-367; Div 3, Water Code, State of Calif; ER 1110-2-100; etc.

LINE 9:

Item [56] REMARKS: Preface remarks with the item number to which it pertains. e.g., 34.2, 500,000 c.y. conc. 475,000 c.y. earthfill. Only one Remarks line should be used for PART II remarks.

PART III - INVENTORY OF DAMS IN THE UNITED STATES
SUPPLEMENTARY DATA

STATE	IDENTITY NUMBER
VT	00062

LOCATION

A-1 TOWN	A-2 NED PERMIT NO	A-3 STATE NUMBER	A-4 FERC NO	A-5 USGS SHEET
CHICKERO		VT00062		NILES HOND VT-NH

DRAINAGE CHARACTERISTICS

B-1 DRAINAGE AREA SQ MI	B-2 FLOW DATA MIN C.F.S.	B-3 FLOW DATA AVE. C.F.S.	B-4 FLOW DATA MAX. C.F.S.	B-5 CREST ELEV. M.S.L.	B-6 ABUT. ELEV. M.S.L.	B-7 USABLE STORAGE ACRE FEET	B-8 RESERVOIR AREA ACRES	B-9 FLASH BOARD HT FEET	B-10 OUTLET CONDUITS NO	B-10 OUTLET CONDUITS SIZE	B-11 INVERT ELEV M.S.L.	B-12
6.7				99		830	210					

POWER DATA

C-1 GENERATION UNITS INSTALLED NO	C-1 GENERATION UNITS INSTALLED CAP	C-1 GENERATION UNITS INSTALLED KW	C-2 GENERATION UNITS PLANNED NO	C-2 GENERATION UNITS PLANNED CAP	C-2 GENERATION UNITS PLANNED KW	C-3 AVERAGE ANNUAL GENERATION K W H	C-4 LAST GEN YEAR	C-5 RETIRED YEAR	C-6 FORMER USE	C-7 CAPACITY FACTOR

END

DATE
FILMED

8 -85

DTI